## **CURRICULUM**

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# **Boiler Operator**

(A Competency Based Short-term Curriculum)



Council for Technical Education and Vocational Training

## Curriculum Development Division

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#### Introduction

This curriculum has been developed with a purpose of preparing Boiler Operator as a lower level technical workforce able to get employment in the country. The technical skills incorporated in this curriculum come from the boiler operation technology. Its contents are organized in the form of modules. So it is a tailor made curriculum with a special purpose to be implemented in a modular form.

It is a competency based curriculum. It is also designed to produce lower level technical workforce in the field of boiler operation technology equipped with skills and knowledge related to boiler operation technology in order to meet the demand of such workforce in the country so as to contribute in the national streamline of poverty reduction.

#### Aims

The main aim of this curricular program is to produce skilled workforce in the field of boiler operation technology by providing training to the potential citizen of the country and link them to employment opportunities in the country. The aims of this curriculum are:

- To produce lower level technical workforce in the area of boiler operation technology
- To produce such technical workforce who will be able to provide serves related to boiler operation to the needy through the application of the techniques /skills of boiler operation technology being an entrepreneur

#### **Objectives**

After the completion or this training program, the trainees will be able:

- To enforce safety measures
- To handle tools /equipments /materials
- To perform identification of components/devices/accessories
- To control/maintain fuel system
- To control /maintain water system
- To inspect operating system
- To perform standard operation procedures (SOP)

- To conduct efficiency tests
- To perform preventive maintenance
- To perform servicing
- To perform troubleshooting
- To maintain/repair/replace components/devices/accessories
- To keep records
- To communicate with others
- To develop professionally
- To develop entrepreneurial skills

#### Description

This curriculum provides skills and knowledge necessary for boiler operator as a technical worker. There will be both demonstration by trainers/instructors and opportunity by trainees to carry out the skills/tasks necessary for this level of technical workforce. Trainees will practice and learn skills by using typical tools, materials and equipment necessary for this curricular program.

On successful completion of this training, the trainees will be able to enforce safety measures, handle tools/equipments/materials, perform identification of components /devices/accessories, control/maintain fuel system, control /maintain water system, inspect operating system, perform standard operation procedures (SOP), conduct efficiency tests, perform preventive maintenance, perform servicing, troubleshoot problems, maintain/repair/replace components/devices/accessories, keep records, communicate with others, develop professionally and develop entrepreneurial skills.

#### **Course structure**

Courses	dotaic	,					
Modules/sub modules	Nature	Th.	Pr.	Tot.	Th.	Pr.	Tot.
1.Boiler introduction		21	27	48	10	40	50
1. Boiler fundamentals, operation and safety	T + P	6	6	12			
2. Boiler maintenance, inspection, testing & efficiency	T + P	5	5	10			
3. Enforcing safety measures	T + P	2	4	6			
4. Tools, materials & equipments	T + P	4	6	10			
5. Components/devices/accessories	T + P	4	6	10			
2.Controlling / maintaining / inspecting	T + P	11	44	55	10	40	50
systems							
1. Fuel system	T + P	2	8	10			
2. Water system	T + P	2	8	10			
3. Inspecting operating system	T + P	7	28	35			
3.Standard operation procedures (SOP)	T + P	16	66	82	15	60	<b>75</b>
4.Efficiency tests	T + P	4	12	16	5	20	25
5.Servicing, repair and maintenance	T + P	33	156	189	20	80	100
1. Preventive maintenance	T + P	6	24	30			
2. Servicing	T + P	8	32	40			
3. Troubleshooting	T + P	4	20	24			
4. Repair, replacement and maintenance	T + P	15	80	95			
Sub total:		85	305	390	60	240	300
6.Common module		14	56	70	10	40	50
1. Applied math	T + P	4	16	20			
2. Occupational health and safety	T + P	2	8	10			
3. First aid	T + P	1	4	5			
4. HIV/AIDS	T + P	1	4	5			
5. Communication	T + P	2	8	10			
6. Small enterprise development	T + P	4	16	20			
Total:		99	361	460	70	280	350

The total duration of this curricular program will be 390 hours [three months] plus 70 hours of common module Target group The target group for this training will be all the interested individuals of the country with academic qualification of grade eight pass **Group size** The group size of this training program will be not more than 20 **Target location** The target location of this training program will be all over Nepal. **Medium of Instruction** The medium of instruction for this training program will be Nepali or English or both. Pattern of attendance The trainees should have 80% attendance in theory classes and 90% in practical (Performance) to be eligible for internal assessment and final examinations Focus of the program This is a competency based curriculum. This curriculum emphasizes on competent performance of the task specified in it. Not less than 80% time is allotted to the competencies and not more than 20% to the related technical knowledge. So, the main focus will be on the performance of the specified competencies/tasks /skills included in this curriculum Entry criteria Individuals who meet the following criteria will be allowed to enter in this curricular program • Eight grade pass Preference will be given to female, Dalit, Janjati, and Conflict affected • Physically and mentally fit people • Age: minimum of 16 years old Follow up suggestion This is not a training program only for training sake. The ultimate success of this program will rest on the proficiency of the graduates of this training program in providing services in the community either by wage employment or by selfemployment. To assess the success of this program and collect feedbacks/inputs for the revision of the program, a schedule of follow up is suggested as follows:-First follow up: - Six months after the completion of the training program. Second follow up: - Six months after the completion of the first follow up. Follow up cycle: - In a cycle of one year after the completion of second follow up for five years **Certificate requirement** The related training institute will provide the certificate of "Boiler Operator" to those individuals who successfully complete all the tasks with their related technical knowledge specified in this curriculum. Student evaluation details Continuous evaluation of the trainees' performance is to be done by the related

instructor/trainer to ensure the proficiency over each competency.

written or oral tests as per the nature of the content

Related technical knowledge learnt by the trainees will be evaluated through

• Trainees must secure minimum marks of 60% in an average of both theory and practical evaluations

#### Trainers' qualification

- Diploma in electrical engineering plus trainings in boiler operation technology
- Good communicative & instructional skills.
- Experience in the related field.\

#### Trainer: trainee's ratio

- 1:10 for practical classes
- Depends on the nature of subject matter and class room situation for theory classes.

#### Suggestion for instruction

- 1. Demonstrate task performance
  - Demonstrate task performance in normal speed
  - Demonstrate slowly with verbal description of each and every steps in the sequence of activity flow of the task performance using question and answer techniques
  - Repeat the above step for the clarification on trainees demand if necessary.
  - Perform fast demonstration of the task performance.
- 2. Provide trainees the opportunity to practice the task performance demonstrated.
  - Provide trainees to have guided practice:- create environment for practicing the demonstrated task performance and guide the trainees in each and every step of task performance
  - Provide trainees the opportunity to repeat & re-repeat as per the need to be proficient on the given task performance
  - Switch to another task demonstration if and only if the trainees developed proficiency in the given task performance
- 3. Evaluation performance of the trainees/ student
  - Perform task analysis
  - Develop a detail task performance check list
  - Perform continuous performance evaluation of the trainees / students by applying the performance check list.

#### List of modules and sub modules

#### **Module: 1: Boiler introduction**

Sub module: 1: Boiler fundamentals, operation and safety

Sub module: 2: Boiler maintenance, inspection, testing & efficiency

Sub module: 3: Enforcing safety measures

Sub module: 4: Tools, materials & equipments

Sub module: 5: Components/devices/accessories

#### **Module: 2: Controlling / maintaining / inspecting systems**

Sub module: 1: Fuel system

Sub module: 2: Water system

Sub module: 3: Inspecting operating system

**Module: 3: Standard operation procedures (SOP)** 

**Module: 4: Efficiency tests** 

Module: 5: Servicing, repair and maintenance

Sub module: 1: Preventive maintenance

Sub module: 2: Servicing

Sub module: 3: Troubleshooting

Sub module: 4: Repair, replacement and maintenance

**Module: 6: Common module** 

Sub module: 1: Applied math Sub module: 2: Occupational health and safety

Sub module: 3: First aid Sub module: 4: HIV/AIDS Sub module: 5: Communication

Sub module: 6: Small enterprise development

#### Details of modules and sub modules

	e: 1: Boiler introduction
fundamentals, operation and s efficiency; enforcing safety of components, devices, and acce	he knowledge and skills related to boiler safety; boiler maintenance, inspection, testing & measures; tools, materials & equipments; and essories.
Objectives:	
<ul> <li>To provide introduction to boilers including every day operation and important safety practices</li> <li>To provide information about important inspection, maintenance and burner efficiency practices for boiler systems</li> </ul>	<ul> <li>To enforcing safety measures</li> <li>To identify/handle tools, materials &amp; equipments</li> <li>To identify components, devices &amp; accessories</li> </ul>
Sub modules:	
<ol> <li>Boiler fundamentals, operation and safety</li> <li>Boiler maintenance, inspection, testing &amp; efficiency</li> </ol>	<ol> <li>Enforcing safety measures</li> <li>Tools, materials &amp; equipments</li> <li>Components/devices/accessories</li> </ol>
	r fundamentals, operation and safety
fundamentals, operation and sa	he knowledge and skills related to boiler afety.
Objectives:	
<ul> <li>To be familiar with boiler fundamentals</li> <li>To be familiar with fundamentals of combustion and heat transfer</li> <li>To be familiar with burner operation and control</li> </ul>	<ul> <li>To be familiar with boiler operation and testing</li> <li>To be familiar with boiler room safety</li> <li>To be familiar with cause and effect case study</li> </ul>
	a task statement, related technical knowledge k and time necessary for both the theory and

		(Th.) + 6 hrs. (Pr.) = 12 hrs. (Tot.)		me (h			
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.		
1.	Be familiar with boiler	<b>Boiler fundamentals</b> :	1	1	2		
	fundamentals	<ul><li>Fundamentals of fire tube</li></ul>					
		boilers					
		<ul><li>Fundamentals of water tube</li></ul>					
		boilers					
		<ul><li>Fundamentals of cast iron</li></ul>					
		boilers					
		<ul> <li>Fundamentals of high pressure</li> </ul>					
		boilers					
		<ul> <li>Fundamentals of low pressure</li> </ul>					
		boilers					
		<ul><li>Fundamentals of steam boilers</li></ul>					
		<ul> <li>Fundamentals of hydronic</li> </ul>					
		boilers					
2.	Be familiar with	Fundamentals of combustion and	1	1	2		
	fundamentals of combustion	heat transfer:					
	and heat transfer	<ul><li>Theory of combustion</li></ul>					
		<ul><li>Thermodynamics</li></ul>					
		<ul><li>Steam tables</li></ul>					
3.	Be familiar with burner	<b>Burner operation and control</b> :	1	1	2		
	operation and control	■ Gas train					
		Oil train					
		<ul><li>Standard burner</li></ul>					
		<ul><li>High turndown burner</li></ul>					
		<ul><li>Burner controls</li></ul>					
4.	Be familiar with boiler	<b>Boiler operation and testing:</b>	1	1	2		
	operation and testing	<ul> <li>Operator licensing and</li> </ul>					
		certification					
		<ul><li>Start-up and shut-down</li></ul>					
		<ul><li>Normal operation</li></ul>					
		<ul><li>Valve types</li></ul>					
		<ul><li>Safety valves</li></ul>					
		<ul> <li>Low water cutoff controls</li> </ul>					
5.	Be familiar with boiler room	Boiler room safety:	1	1	2		
	safety	<ul> <li>Boiler accidents</li> </ul>					
		Cause and effect					
6.	Be familiar with cause and	Cause and effect case study:	1	1	2		
	effect case study	<ul><li>Safety valves</li></ul>					
		<ul><li>Confined spaces</li></ul>					
		■ Lockout / tag out					
	Sub total:		6	6	12		
	Sub module: 2: Boile	er maintenance, inspection, testi efficiency	ng &				
	<b>Description:</b> It includes	the knowledge and skills related	to 1	oiler			
	maintenance, inspection, testi	•	•				
	Objectives:						
	Objectives:						

	<ul> <li>To be familiar with</li> </ul>	<ul> <li>To be familiar with inspection/ma</li> </ul>	intena	ınce	
	construction and design	of commercial/industrial boilers			
	standards	■ To be familiar with boiler/burner	efficie	ency	
	<ul> <li>To be familiar with</li> </ul>	<ul> <li>To be familiar with trouble shooti</li> </ul>	ng	•	
	controls/safety devices		Ü		
	for automatically fired				
	boilers				
	Tasks: Each task consists of	f a task statement, related technical	know	ledge	
		sk and time necessary for both the		_	
	practical aspects of the task.				
		4. (Th.) + 5 hrs. (Pr.) = 10 hrs. (Tot.)	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Be familiar with	Construction and design	1	1	2
	construction and design	standards:			
	standards	■ ASME codes			
	311111111111111111111111111111111111111	<ul> <li>NFPA codes</li> </ul>			
		NBIC codes			
2.	Be familiar with	Controls/safety devices for	1	1	2
2.	controls/safety devices for	automatically fired boilers:	1	1	_
	automatically fired boilers	Water level control			
	automatically filed boliefs	<ul><li>Temperature control</li></ul>			
		Pressure control			
		Fuel trains			
3.	Be familiar with	Inspection/maintenance of	1	1	2
٥.	inspection/maintenance of	commercial/industrial boilers:	1	1	2
	commercial/industrial	Fireside			
	boilers	<ul><li>Waterside</li></ul>			
	bollers	Burner			
		Auxiliary equipment			
4.	Be familiar with	Boiler and burner efficiency:	1	1	2
4.	boiler/burner efficiency	<ul> <li>Heat exchanger efficiency</li> </ul>	1	1	2
	boner/burner efficiency	<ul><li>Combustion efficiency</li></ul>			
		<ul><li>Efficiency tests</li></ul>			
		<ul><li>Condensate return</li></ul>			
		Steam traps			
5.	Be familiar with trouble	1	1	1	2
5.		<b>Trouble shooting</b> :  Burner	1	1	2
	shooting	- Guinei - Controls			
	Sub total:	- Condois	5	5	10
		2: Enforcing safety measures	3	3	10
			•	C .	
	_	knowledge and skills related to enfor	cing s	arety	
	measures; tools, materials & e	equipments.			
	Objectives:				
	<ul> <li>To ensure personal</li> </ul>	To ensure buzzer (Hotter) functio	ning		
	safety	<ul> <li>To ensure blower setting</li> </ul>			
	<ul> <li>To ensure fuel valve for</li> </ul>	<ul> <li>To ensure to the pipe line checking</li> </ul>	ıg		
	safety to fuel pump	(fuel/water)			
	<ul> <li>To ensure setting point</li> </ul>	<ul> <li>To ensure safety valve conditionis</li> </ul>	ng		

	C.C. 1				
	of fuel	To ensure trap valve functioning			
	<ul> <li>To ensure point water</li> </ul>	To minimize pollution			
	level	To ensure setting temperature			
	<ul> <li>To ensure sensor</li> </ul>				
	functioning				
	<ul> <li>To ensure boiler room</li> </ul>				
	cleanliness				
		f a task statement, related technical		_	
	• •	sk and time necessary for both the	theory	and	
	practical aspects of the task.				
	2 hı	rs. (Th.) + 4 hrs. (Pr.) = 6 hrs. (Tot.)	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Ensure personal safety	<b>Ensuring personal safety:</b>	0.2	0.4	0.6
		<ul><li>Concept, need, importance and</li></ul>			
		application of personal safety			
		<ul><li>Procedures for personal safety</li></ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Ensure fuel valve for safety	<b>Ensuring fuel valve for safety to</b>	0.2	0.3	0.5
	to fuel pump	fuel pump:			
	1 1	<ul><li>Concept of ensuring fuel valve</li></ul>			
		for safety to fuel pump			
		• "Why" and "how" of ensuring			
		fuel valve for safety to fuel			
		pump			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Ensure setting point of fuel	<b>Ensuring setting point of fuel:</b>	0.2	0.3	0.5
	<i>3</i> 1	<ul> <li>Concept of ensuring setting</li> </ul>			
		point of fuel			
		• "Why" and "how" of ensuring			
		setting point of fuel			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Ensure point water level	Ensuring point water level:	0.2	0.3	0.5
	1	<ul> <li>Concept of ensuring point water</li> </ul>			
		level			
		• "Why" and "how" of ensuring			
		point water level			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Ensure sensor functioning	Ensuring sensor functioning:	0.2	0.3	0.5
	8	<ul> <li>Concept of ensuring sensor</li> </ul>			
		functioning			
		• "Why" and "how" of ensuring			
		sensor functioning			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Ensure boiler room	Ensuring boiler room	0.2	0.3	0.5
	cleanliness	cleanliness:			
			l	<u> </u>	

	T		1		
		<ul> <li>Concept of ensuring boiler</li> </ul>			
		room cleanliness			
		• "Why" and "how" of ensuring			
		boiler room cleanliness			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Ensure buzzer (Hotter)	<b>Ensuring buzzer (Hotter)</b>	0.2	0.3	0.5
	functioning	functioning:			
		<ul> <li>Concept of ensuring buzzer</li> </ul>			
		(Hotter) functioning			
		• "Why" and "how" of ensuring			
		buzzer (Hotter) functioning			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
8.	Ensure blower setting	<b>Ensuring blower setting:</b>	0.1	0.3	0.4
		<ul><li>Concept of ensuring blower</li></ul>			
		setting			
		<ul><li>"Why" and "how" of ensuring</li></ul>			
		blower setting			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
9.	Ensure the pipe line	<b>Ensuring the pipe line checking</b>	0.1	0.3	0.4
	checking (fuel/water)	(fuel/water):			
	_	<ul><li>Concept of ensuring the pipe</li></ul>			
		line checking (fuel/water)			
		<ul><li>"Why" and "how" of ensuring</li></ul>			
		the pipe line checking			
		(fuel/water)			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
10.	Ensure safety valve	Ensuring safety valve	0.1	0.3	0.4
	conditioning	conditioning:			
		<ul><li>Concept of ensuring safety</li></ul>			
		valve conditioning			
		<ul><li>"Why" and "how" of ensuring</li></ul>			
		safety valve conditioning			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
11.	Ensure trap valve	<b>Ensuring trap valve functioning:</b>	0.1	0.3	0.4
	functioning	<ul> <li>Concept of ensuring trap valve</li> </ul>			
		functioning			
		• "Why" and "how" of ensuring			
		trap valve functioning			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
12.	Minimize pollution	Minimizing pollution:	0.1	0.3	0.4
	1	<ul><li>Concept of minimizing</li></ul>			
		pollution			
		• "Why" and "how" of			
		minimizing pollution			
L	<u> </u>	or	1	1	1

	<u> </u>	- D-1-4-1			
		Related precautions to be taken			
		Related records to be kept			
13.	Ensure setting temperature	<b>Ensuring setting temperature</b> :	0.1	0.3	0.4
		<ul><li>Concept of ensuring setting</li></ul>			
		temperature			
		<ul><li>"Why" and "how" of ensuring</li></ul>			
		setting temperature			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:		2	4	6
	Sub module: 3	Tools, materials & equipments	•		
	<b>Description:</b> It includes the l	knowledge and skills related to tools, i	materia	als &	
	equipments.				
	Objectives:				
	· ·	To how die the away a master.			
	To handle wrench set	To handle thermometer			
	To handle pliers  To handle line/phase	To handle taco meter			
	<ul> <li>To handle line/phase</li> </ul>	To handle grease gun			
	tester	To handle oil-can			
	To handle multimeter	■ To handle holder			
	<ul> <li>To handle pipe/slide</li> </ul>	■ To handle welding machine			
	wrench	<ul> <li>To handle safety goggles</li> </ul>			
	To handle hammer	■ To handle hand seal			
	<ul> <li>To handle Allen key</li> </ul>	<ul> <li>To handle lather apron</li> </ul>			
	■ To handle pin punch	<ul> <li>To handle chipping hammer</li> </ul>			
	<ul> <li>To handle screw driver</li> </ul>	<ul> <li>To handle PH meter</li> </ul>			
	■ To handle hacksaw	<ul> <li>To handle gauge meter</li> </ul>			
	frame	<ul> <li>To handle arc welding rod</li> </ul>			
	<ul> <li>To handle chisel</li> </ul>	<ul> <li>To handle water test kit</li> </ul>			
	<ul><li>To handle sprit level</li></ul>	<ul><li>To handle anometer</li></ul>			
	<ul> <li>To handle venire caliper</li> </ul>	<ul> <li>To handle fuel ( kerosene/furna</li> </ul>	ice		
	<ul><li>To handle die set</li></ul>	oil/husu)			
	<ul><li>To handle file</li></ul>	<ul><li>To handle pressure gauge</li></ul>			
	<ul><li>To handle vice</li></ul>				
	■ To handle drill machine				
	<ul> <li>To handle nozzle brush</li> </ul>				
	<ul> <li>To handle flat brush and</li> </ul>				
	round brush				
	Tasks: Each task consists o	f a task statement, related technical	know	ledge	
		sk and time necessary for both the		_	
	practical aspects of the task.	·	J		
	-	rs.(Th.) + 5 hrs.(Pr.) = 10 hrs.(Tot.)	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Handle wrench set	Handling wrench set:	0.2	0.1	0.3
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	<ul> <li>Identification of wrench set</li> </ul>			
		<ul> <li>Applications and uses of</li> </ul>			
		wrench set			
		<ul><li>Handling and care of wrench set</li></ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related precautions to be taken</li> <li>Related records to be kept</li> </ul>			
		- Related records to be kept			

2.	Handle pliers	Handling pliers:	0.2	0.1	0.3
		<ul> <li>Identification of pliers</li> </ul>			
		<ul> <li>Applications and uses of pliers</li> </ul>			
		<ul> <li>Handling and care of pliers</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Handle line/phase tester	Handling line/phase tester:	0.2	0.1	0.3
		<ul> <li>Identification of line/phase</li> </ul>			
		tester			
		<ul> <li>Applications and uses of</li> </ul>			
		line/phase tester			
		<ul> <li>Handling and care of line/phase</li> </ul>			
		tester			
		<ul> <li>Related precautions to be taken</li> </ul>			
	TT 11 1.1	Related records to be kept	0.2	0.1	0.2
4.	Handle multimeter	Handling multimeter:	0.2	0.1	0.3
		Identification of multimeter			
		Applications and uses of			
		multimeter  Handling and care of			
		<ul> <li>Handling and care of multimeter</li> </ul>			
		<ul><li>Related precautions to be taken</li><li>Related records to be kept</li></ul>			
5.	Handle pipe/slide wrench	Handling pipe/slide wrench:	0.1	0.1	0.2
٥.	Trandle pipe/slide wrench	<ul> <li>Identification of pipe/slide</li> </ul>	0.1	0.1	0.2
		wrench			
		<ul> <li>Applications and uses of</li> </ul>			
		pipe/slide wrench			
		<ul> <li>Handling and care of pipe/slide</li> </ul>			
		wrench			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Handle hammer	Handling hammer:	0.1	0.1	0.2
		<ul> <li>Identification of hammer</li> </ul>	"		
		<ul> <li>Applications and uses of</li> </ul>			
		hammer			
		<ul> <li>Handling and care of hammer</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Handle Allen key	Handling Allen key:	0.1	0.1	0.2
		<ul> <li>Identification of Allen key</li> </ul>			
		<ul> <li>Applications and uses of Allen</li> </ul>			
		key			
		<ul> <li>Handling and care of Allen key</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
8.	Handle pin punch	Handling pin punch:	0.1	0.1	0.2
		<ul> <li>Identification of pin punch</li> </ul>			
		<ul> <li>Applications and uses of pin</li> </ul>			
		punch			

	<u> </u>		1	1	
		<ul> <li>Handling and care of pin punch</li> </ul>			
		Related precautions to be taken			
		<ul> <li>Related records to be kept</li> </ul>			
9.	Handle screw driver	Handling screw driver:	0.1	0.1	0.2
		<ul> <li>Identification of screw driver</li> </ul>			
		<ul> <li>Applications and uses of screw</li> </ul>			
		driver			
		<ul> <li>Handling and care of screw</li> </ul>			
		driver			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
10.	Handle hacksaw frame	Handling hacksaw frame:	0.1	0.1	0.2
		<ul> <li>Identification of hacksaw frame</li> </ul>			
		<ul> <li>Applications and uses of</li> </ul>			
		hacksaw frame			
		<ul> <li>Handling and care of hacksaw</li> </ul>			
		frame			
		<ul> <li>Related precautions to be taken</li> </ul>			
11	Handle ships!	Related records to be kept	0.1	0.1	0.2
11.	Handle chisel	Handling chisel:  Identification of chisel	0.1	0.1	0.2
		<ul><li>Applications and uses of chisel</li><li>Handling and care of chisel</li></ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related precautions to be taken</li> <li>Related records to be kept</li> </ul>			
12.	Handle sprit level	Handling sprit level:	0.1	0.1	0.2
12.	Trandic Sprit level	<ul> <li>Identification of sprit level</li> </ul>	0.1	0.1	0.2
		<ul> <li>Applications and uses of sprit</li> </ul>			
		level			
		<ul> <li>Handling and care of sprit level</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
13.	Handle venire caliper	Handling venire caliper:	0.1	0.2	0.3
		<ul> <li>Identification of venire caliper</li> </ul>			
		<ul> <li>Applications and uses of venire</li> </ul>			
		caliper			
		<ul> <li>Handling and care of venire</li> </ul>			
		caliper			
		<ul> <li>Related precautions to be taken</li> </ul>			
1.4	** 11 11	Related records to be kept	0.1	0.0	0.2
14.	Handle die set	Handling die set:	0.1	0.2	0.3
		<ul> <li>Identification of die set</li> <li>Applications and uses of die set</li> </ul>			
		<ul><li>Applications and uses of die set</li><li>Handling and care of die set</li></ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related precautions to be taken</li> <li>Related records to be kept</li> </ul>			
15.	Handle file	Handling file:	0.1	0.2	0.3
13.	Tandio IIIC	<ul><li>Identification of file</li></ul>	0.1	0.2	0.5
		<ul> <li>Applications and uses of file</li> </ul>			
L	I	1 11	1	1	1

		■ Handling and care of file			
		Tranding and care of the			
		Related precautions to be taken			
16.	Handle vice	Related records to be kept	0.1	0.2	0.3
10.	Handle vice	Handling vice:  Identification of vice	0.1	0.2	0.3
		ripplications and ases of vice			
		Tranding and care of vice			
		Related precautions to be taken			
17	Handle Add on the	Related records to be kept	0.1	0.2	0.2
17.	Handle drill machine	Handling drill machine:	0.1	0.2	0.3
		Identification of drill machine			
		<ul> <li>Applications and uses of drill</li> </ul>			
		machine			
		<ul> <li>Handling and care of drill</li> </ul>			
		machine			
		Related precautions to be taken			
1.0	** 11 1 1	Related records to be kept	0.1	0.2	0.0
18.	Handle nozzle brush	Handling nozzle brush:	0.1	0.2	0.3
		Identification of nozzle brush			
		<ul> <li>Applications and uses of nozzle</li> </ul>			
		brush			
		<ul> <li>Handling and care of nozzle</li> </ul>			
		brush			
		Related precautions to be taken			
		<ul> <li>Related records to be kept</li> </ul>			
10	TT 11 CL 4 1 1 1 1		0.1	0.0	0.2
19.	Handle flat brush and round	Handling flat brush and round	0.1	0.2	0.3
19.	Handle flat brush and round brush	Handling flat brush and round brush:	0.1	0.2	0.3
19.		Handling flat brush and round brush:  Identification of flat brush and	0.1	0.2	0.3
19.		Handling flat brush and round brush:  Identification of flat brush and round brush	0.1	0.2	0.3
19.		Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat	0.1	0.2	0.3
19.		Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush	0.1	0.2	0.3
19.		<ul> <li>Handling flat brush and round</li> <li>brush:</li> <li>Identification of flat brush and round brush</li> <li>Applications and uses of flat brush and round brush</li> <li>Handling and care of flat brush</li> </ul>	0.1	0.2	0.3
19.		<ul> <li>Handling flat brush and round brush:</li> <li>Identification of flat brush and round brush</li> <li>Applications and uses of flat brush and round brush</li> <li>Handling and care of flat brush and round brush</li> </ul>	0.1	0.2	0.3
19.		<ul> <li>Handling flat brush and round brush:</li> <li>Identification of flat brush and round brush</li> <li>Applications and uses of flat brush and round brush</li> <li>Handling and care of flat brush and round brush</li> <li>Related precautions to be taken</li> </ul>	0.1	0.2	0.3
	brush	<ul> <li>Handling flat brush and round</li> <li>brush:         <ul> <li>Identification of flat brush and round brush</li> <li>Applications and uses of flat brush and round brush</li> <li>Handling and care of flat brush and round brush</li> <li>Related precautions to be taken</li> <li>Related records to be kept</li> </ul> </li> </ul>			
19.		Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer:	0.1	0.2	0.3
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer			
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of			
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer			
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of			
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer			
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken			
20.	Handle thermometer	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related records to be kept	0.1	0.2	0.3
	brush	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related precautions to be taken Related records to be kept Handling taco meter:			
20.	Handle thermometer	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related records to be kept Handling taco meter: Identification of taco meter	0.1	0.2	0.3
20.	Handle thermometer	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related precautions to be taken Related records to be kept Handling taco meter: Identification of taco meter Applications and uses of taco	0.1	0.2	0.3
20.	Handle thermometer	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related precautions to be taken Related records to be kept Handling taco meter: Identification of taco meter Applications and uses of taco meter	0.1	0.2	0.3
20.	Handle thermometer	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related precautions to be taken Related records to be kept Handling taco meter: Applications and uses of taco meter Handling and care of taco meter Handling and care of taco meter Handling and care of taco meter	0.1	0.2	0.3
20.	Handle thermometer	Handling flat brush and round brush:  Identification of flat brush and round brush Applications and uses of flat brush and round brush Handling and care of flat brush and round brush Related precautions to be taken Related records to be kept Handling thermometer: Identification of thermometer Applications and uses of thermometer Handling and care of thermometer Related precautions to be taken Related precautions to be taken Related precautions to be taken Related records to be kept Handling taco meter: Identification of taco meter Applications and uses of taco meter	0.1	0.2	0.3

22.	Uandla grassa gun	Uandling grasse gun:	0.1	0.2	0.3
22.	Handle grease gun	Handling grease gun:  Identification of grease gun	0.1	0.2	0.3
		identification of grouse gui			
		ripplications and ases of grease			
		gun <ul> <li>Handling and care of grease gun</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
23.	Handle oil-can	Handling oil-can:	0.1	0.2	0.3
23.	Transic on can	<ul> <li>Identification of oil-can</li> </ul>	0.1	0.2	0.3
		<ul> <li>Applications and uses of oil-can</li> </ul>			
		Handling and care of oil-can			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
24.	Handle holder	Handling holder:	0.1	0.2	0.3
		<ul> <li>Identification of holder</li> </ul>			
		<ul> <li>Applications and uses of holder</li> </ul>			
		<ul> <li>Handling and care of holder</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
25.	Handle welding machine	<b>Handling welding machine:</b>	0.1	0.2	0.3
		<ul> <li>Identification of welding</li> </ul>			
		machine			
		<ul> <li>Applications and uses of</li> </ul>			
		welding machine			
		<ul> <li>Handling and care of welding</li> </ul>			
		machine			
		<ul> <li>Related precautions to be taken</li> </ul>			
26	Handle sefety acceles	Related records to be kept  Handling safety gaggles:	0.1	0.2	0.3
26.	Handle safety goggles	Handling safety goggles:  Identification of safety goggles	0.1	0.2	0.5
		<ul> <li>Applications and uses of safety</li> </ul>			
		goggles			
		<ul><li>Handling and care of safety</li></ul>			
		goggles			
		<ul><li>Related precautions to be taken</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
27.	Handle hand seal	Handling hand seal:	0.1	0.2	0.3
		<ul> <li>Identification of hand seal</li> </ul>			
		<ul> <li>Applications and uses of hand</li> </ul>			
		seal			
		<ul> <li>Handling and care of hand seal</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
28.	Handle lather apron	<b>Handling lather apron:</b>	0.1	0.2	0.3
		<ul> <li>Identification of lather apron</li> </ul>			
		<ul> <li>Applications and uses of lather</li> </ul>			
		apron			
		<ul> <li>Handling and care of lather</li> </ul>			
		apron			
		<ul> <li>Related precautions to be taken</li> </ul>			

		Related records to be kept			
29.	Handle chipping hammer	Handling chipping hammer:	0.1	0.2	0.3
		<ul> <li>Identification of chipping</li> </ul>			
		hammer			
		<ul><li>Applications and uses of</li></ul>			
		chipping hammer			
		<ul> <li>Handling and care of chipping</li> </ul>			
		hammer			
		<ul> <li>Related precautions to be taken</li> </ul>			
		Related records to be kept			
30.	Handle PH meter	Handling PH meter:	0.1	0.2	0.3
50.	Trandic 1 11 meter	<ul> <li>Identification of PH meter</li> </ul>	0.1	0.2	0.5
		<ul> <li>Applications and uses of PH</li> </ul>			
		meter			
		<ul> <li>Handling and care of PH meter</li> </ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
31.	Handle gauge meter	Handling gauge meter:	0.1	0.2	0.3
51.	Trandic gauge meter	<ul> <li>Identification of gauge meter</li> </ul>	0.1	0.2	0.5
		<ul> <li>Applications and uses of gauge</li> </ul>			
		meter			
		<ul><li>Handling and care of gauge</li></ul>			
		meter			
		<ul> <li>Related precautions to be taken</li> </ul>			
		Related records to be kept			
32.	Handle arc welding rod	•	0.1	0.2	0.3
34.	Trandle are welding rod	Handling arc welding rod:  Identification of arc welding rod	0.1	0.2	0.5
		<ul> <li>Applications and uses of arc</li> </ul>			
		welding rod			
		<ul> <li>Handling and care of arc</li> </ul>			
		welding rod			
		<ul> <li>Related precautions to be taken</li> </ul>			
		Related records to be kept			
33.	Handle water test kit	Handling water test kit:	0.1	0.2	0.3
33.	Trandic water test kit	<ul> <li>Identification of water test kit</li> </ul>	0.1	0.2	0.5
		<ul> <li>Applications and uses of water</li> </ul>			
		test kit			
		<ul> <li>Handling and care of water test</li> </ul>			
		kit			
		<ul> <li>Related precautions to be taken</li> </ul>			
		Related records to be kept			
34.	Handle anometer	Handling anometer:	0.1	0.2	0.3
JT.	Transic unometer	<ul> <li>Identification of anometer</li> </ul>	0.1	0.2	0.5
		<ul> <li>Applications and uses of</li> </ul>			
		anometer			
		<ul><li>Handling and care of anometer</li></ul>			
		<ul> <li>Related precautions to be taken</li> </ul>			
		Related records to be kept			
35.	Handle fuel	Handling fuel (kerosene/ furnace	0.1	0.2	0.3
55.	(kerosene/furnace oil/husu)	oil/husu):	0.1	0.2	0.5
	(Kerosene/Turnace On/Husu)	on/nusu).			

		1
	Identification of fuel	
	(kerosene/furnace oil/husu)	
	Applications and uses of fuel (	
	kerosene/furnace oil/husu)	
	Handling and care of fuel	
	(kerosene/furnace oil/husu)	
	Related precautions to be taken	
26 11 11	Related records to be kept	0.2
36. Handle pressure gauge	Handling pressure gauge:  Identification of pressure gauge  0.1 0.2	0.3
	identification of pressure gauge	
	Applications and uses of	
	pressure gauge  Handling and care of pressure	
	Tranding and care of pressure	
	gauge  Poleted processions to be taken	
	Related precautions to be taken     Related records to be kept	
Sub total:	<ul><li>Related records to be kept</li><li>4</li><li>6</li></ul>	10
		10
	Components/devices/accessories	
	nowledge and skills related to boiler components,	
devices, and accessories.		
Objectives:		
<ul> <li>To identify burner</li> </ul>	<ul> <li>To identify fuel filter/hose pipes</li> </ul>	
<ul> <li>To identify decider plate</li> </ul>	<ul> <li>To identify cap-robber</li> </ul>	
<ul> <li>To identify y-Steiner</li> </ul>	<ul> <li>To identify cupper pipe</li> </ul>	
■ To identify non-return	To identify flinch	
valve	<ul> <li>To identify air blower</li> </ul>	
<ul> <li>To identify safety valve</li> </ul>	<ul> <li>To identify external (over) head</li> </ul>	
<ul> <li>To identify level</li> </ul>	<ul> <li>To identify external body</li> </ul>	
switch/pipe/glass	<ul> <li>To identify flexible pipes</li> </ul>	
<ul> <li>To identify nozzle</li> </ul>	<ul> <li>To identify pressure gauge</li> </ul>	
<ul> <li>To identify fuel pump</li> </ul>	<ul> <li>To identify photocell/sensors</li> </ul>	
<ul><li>To identify ball valve</li></ul>	<ul> <li>To identify heat proof cement (concrete)</li> </ul>	
■ To identify gate valve	<ul> <li>To identify foundation bolts</li> </ul>	
<ul> <li>To identify water pump</li> </ul>	<ul> <li>To identify gaskets (heat proof)</li> </ul>	
<ul> <li>To identify firing</li> </ul>	■ To identify V-belt	
looking glass	To identify water tank/ fuel tank	
To identify release valve	To identify hooter	
To identify coil	To identify burner ignition transformer	
To identify safety head	To identify metal pipes/ water tank	
■ To identify electronic	To identify heat proof gland	
rod	To identify oil heater	
■ To identify pressure		
switch		
To identify butterfly		
valve		
To identify inner jacket		
To identify economizer		+
Tasks: Each task consists of	f a task statement, related technical knowledge sk and time necessary for both the theory and	

	practical aspects of the task.		1 -		<u> </u>
		rs. $(Th.) + 6$ hrs. $(Pr.) = 10$ hrs. $(Tot.)$	1	me (h	
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Identify burner	<b>Identifying burner:</b>	0.1	0.2	0.3
		<ul><li>Concept of burner</li></ul>			
		<ul> <li>Identification of burner</li> </ul>			
		<ul><li>Function and application / uses</li></ul>			
		of burner			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Identify decider plate	<b>Identifying decider plate:</b>	0.1	0.2	0.3
		<ul> <li>Concept of decider plate</li> </ul>			
		<ul> <li>Identification of decider plate</li> </ul>			
		<ul><li>Function and application / uses</li></ul>			
		of decider plate			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Identify y-Steiner	<u>Identifying y-Steiner:</u>	0.1	0.2	0.3
		<ul><li>Concept of y-Steiner</li></ul>			
		<ul> <li>Identification of y-Steiner</li> </ul>			
		<ul><li>Function and application / uses</li></ul>			
		of y-Steiner			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Identify non-return valve	<b>Identifying non-return valve:</b>	0.1	0.2	0.3
		<ul><li>Concept of non-return valve</li></ul>			
		<ul> <li>Identification of non-return</li> </ul>			
		valve			
		<ul><li>Function and application / uses</li></ul>			
		of non-return valve			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Identify safety valve	<b>Identifying safety valve:</b>	0.1	0.2	0.3
		<ul> <li>Concept of safety valve</li> </ul>			
		<ul> <li>Identification of safety valve</li> </ul>			
		<ul><li>Function and application / uses</li></ul>			
		of safety valve			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Identify level	<b>Identifying level</b>	0.1	0.2	0.3
	switch/pipe/glass	switch/pipe/glass:			
		<ul><li>Concept of level</li></ul>			
		switch/pipe/glass			
		<ul> <li>Identification of level</li> </ul>			
		switch/pipe/glass			
		<ul><li>Function and application / uses</li></ul>			
		of level switch/pipe/glass			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Identify nozzle	Identifying nozzle:	0.1	0.2	0.3

		- Concept of normals		I	
		• Concept of nozzle			
		Identification of nozzle			
		• Function and application / uses			
		of nozzle			
		Related precautions/safety			
0	11	Related records to be kept	0.1	0.2	0.2
8.	Identify fuel pump	Identifying fuel pump:	0.1	0.2	0.3
		• Concept of fuel pump			
		Identification of fuel pump     Function and application (years)			
		• Function and application / uses			
		of fuel pump Related precautions/safety			
		<ul><li>Related precautions/sarety</li><li>Related records to be kept</li></ul>			
9.	Identify hell velve	Identifying ball valve:	0.1	0.2	0.3
9.	Identify ball valve		0.1	0.2	0.3
		<ul><li>Concept of ball valve</li><li>Identification of ball valve</li></ul>			
		<ul><li>Function and application / uses</li></ul>			
		of ball valve			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
10.	Identify gate valve	Identifying gate valve:	0.1	0.2	0.3
10.	identify gate varve	<ul><li>Concept of gate valve</li></ul>	0.1	0.2	0.5
		<ul> <li>Identification of gate valve</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of gate valve			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
11.	Identify water pump	Identifying water pump:	0.1	0.2	0.3
		<ul> <li>Concept of water pump</li> </ul>			
		<ul> <li>Identification of water pump</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of water pump			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
12.	Identify firing looking glass	<b>Identifying firing looking glass:</b>	0.1	0.2	0.3
		<ul> <li>Concept of firing looking glass</li> </ul>			
		<ul> <li>Identification of firing looking</li> </ul>			
		glass			
		<ul><li>Function and application / uses</li></ul>			
		of firing looking glass			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
13.	Identify release valve	<b>Identifying release valve:</b>	0.1	0.2	0.3
		<ul> <li>Concept of release valve</li> </ul>			
		<ul> <li>Identification of release valve</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of release valve			
		<ul> <li>Related precautions/safety</li> </ul>			
<u> </u>		Related records to be kept	0.1	0.5	0.5
14.	Identify coil	Identifying coil:	0.1	0.2	0.3

		- C			
		• Concept of coil			
		<ul> <li>Identification of coil</li> </ul>			
		• Function and application / uses			
		of coil  Related precautions/safety			
		Related precautions/surety			
1.5	Identify sofety hand	Related records to be kept	0.1	0.2	0.3
15.	Identify safety head	Identifying safety head:  Concept of safety head	0.1	0.2	0.3
		<ul><li>Concept of safety head</li><li>Identification of safety head</li></ul>			
		<ul><li>Function and application / uses</li></ul>			
		of safety head			
		<ul><li>Related precautions/safety</li></ul>			
		<ul><li>Related precautions/sarcty</li><li>Related records to be kept</li></ul>			
16.	Identify electronic rod	Identifying electronic rod:	0.1	0.2	0.3
10.	identify electronic rod	<ul><li>Concept of electronic rod</li></ul>	0.1	0.2	0.5
		<ul> <li>Identification of electronic rod</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of electronic rod			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
17.	Identify pressure switch	Identifying pressure switch:	0.1	0.2	0.3
17.	racinity pressure switch	<ul> <li>Concept of pressure switch</li> </ul>	0.1	0.2	0.5
		<ul> <li>Identification of pressure switch</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of pressure switch			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
18.	Identify butterfly valve	<b>Identifying butterfly valve:</b>	0.1	0.2	0.3
		<ul><li>Concept of butterfly valve</li></ul>			
		<ul> <li>Identification of butterfly valve</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of butterfly valve			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
19.	Identify inner jacket	<b>Identifying inner jacket:</b>	0.1	0.2	0.3
		<ul><li>Concept of inner jacket</li></ul>			
		<ul> <li>Identification of inner jacket</li> </ul>			
		<ul><li>Function and application / uses</li></ul>			
		of inner jacket			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
20.	Identify economizer	<b>Identifying economizer</b> :	0.1	0.2	0.3
		<ul> <li>Concept of economizer</li> </ul>			
		<ul> <li>Identification of economizer</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of economizer			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept	6 :		0.5
21.	Identify fuel filter/hose	<u>Identifying fuel filter/hose pipes</u> :	0.1	0.1	0.2
	pipes	<ul> <li>Concept of fuel filter/hose pipes</li> </ul>			

	T	T1	1	ı	
		<ul> <li>Identification of fuel filter/hose</li> </ul>			
		pipes			
		• Function and application / uses			
		of fuel filter/hose pipes			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept			
22.	Identify cap-robber	<u>Identifying cap-robber</u> :	0.1	0.1	0.2
		<ul> <li>Concept of cap-robber</li> </ul>			
		<ul> <li>Identification of cap-robber</li> </ul>			
		• Function and application / uses			
		of cap-robber			
		<ul> <li>Related precautions/safety</li> </ul>			
20	71 10	Related records to be kept	0.1	0.1	0.2
23.	Identify cupper pipe	Identifying cupper pipe:	0.1	0.1	0.2
		<ul> <li>Concept of cupper pipe</li> </ul>			
		<ul> <li>Identification of cupper pipe</li> </ul>			
		• Function and application / uses			
		of cupper pipe			
		<ul> <li>Related precautions/safety</li> </ul>			
2.4	71 10 01 1	Related records to be kept	0.1	0.1	0.2
24.	Identify flinch	Identifying flinch:	0.1	0.1	0.2
		Concept of flinch			
		Identification of flinch			
		• Function and application / uses			
		of flinch			
		Related precautions/safety			
25	Identify sin blower	Related records to be kept	0.1	0.1	0.2
25.	Identify air blower	Identifying air blower: Concept of air blower	0.1	0.1	0.2
		<ul> <li>Identification of air blower</li> </ul>			
		<ul> <li>Function and application / uses of air blower</li> </ul>			
		<ul><li>Related precautions/safety</li></ul>			
		<ul><li>Related precautions/safety</li><li>Related records to be kept</li></ul>			
26.	Identify external (over) head	Identifying external (over) head:	0.1	0.1	0.2
20.	identify external (over) flead	Concept of external (over) head	0.1	0.1	0.2
		<ul> <li>Identification of external (over)</li> </ul>			
		head			
		<ul><li>Function and application / uses</li></ul>			
		of external (over) head			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
27.	Identify external body	Identifying external body:	0.1	0.1	0.2
	- Louising Catorina Souy	<ul> <li>Concept of external body</li> </ul>	3.1	0.1	
		<ul> <li>Identification of external body</li> </ul>			
		<ul> <li>Function and application / uses</li> </ul>			
		of external body			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
28.	Identify flexible pipes	Identifying flexible pipes:	0.1	0.1	0.2
<u> </u>			1		

	T	T	1	1	
		<ul> <li>Concept of flexible pipes</li> </ul>			
		<ul> <li>Identification of flexible pipes</li> </ul>			
		<ul><li>Function and application / uses</li></ul>			
		of flexible pipes			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept			
29.	Identify pressure gauge	<u>Identifying pressure gauge:</u>	0.1	0.1	0.2
		<ul> <li>Concept of pressure gauge</li> </ul>			
		Identification of pressure gauge			
		• Function and application / uses			
		of pressure gauge			
		Related precautions/safety			
20	I.l	Related records to be kept	0.1	0.1	0.2
30.	Identify photocell/sensors	Identifying photocell/sensors:	0.1	0.1	0.2
		<ul><li>Concept of photocell/sensors</li><li>Identification of</li></ul>			
		<ul><li>photocell/sensors</li><li>Function and application / uses</li></ul>			
		of photocell/sensors			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related precautions/sarety</li> <li>Related records to be kept</li> </ul>			
31.	Identify heat proof cement	Identifying heat proof cement	0.1	0.1	0.2
51.	(concrete)	(concrete):	0.1	0.1	0.2
	(concrete)	Concept of heat proof cement			
		(concrete)			
		<ul><li>Identification of heat proof</li></ul>			
		cement (concrete)			
		<ul> <li>Function and application / uses</li> </ul>			
		of heat proof cement (concrete)			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
32.	Identify foundation bolts	<b>Identifying foundation bolts:</b>	0.1	0.1	0.2
	•	<ul> <li>Concept of foundation bolts</li> </ul>			
		<ul> <li>Identification of foundation</li> </ul>			
		bolts			
		<ul><li>Function and application / uses</li></ul>			
		of foundation bolts			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
33.	Identify gaskets (heat proof)	<b>Identifying gaskets (heat proof):</b>	0.1	0.1	0.2
		<ul><li>Concept of gaskets (heat proof)</li></ul>			
		<ul> <li>Identification of gaskets (heat</li> </ul>			
		proof)			
		<ul> <li>Function and application / uses</li> </ul>			
		of gaskets (heat proof)			
		<ul> <li>Related precautions/safety</li> </ul>			
0.4	T1 .: C T1 1	Related records to be kept	0.1	0.1	0.2
34.	Identify V-belt	Identifying V-belt:	0.1	0.1	0.2
		Concept of V-belt			
		<ul><li>Identification of V-belt</li></ul>			

	T		1	1	
		• Function and application / uses			
		of V-belt			
		<ul> <li>Related precautions/safety</li> </ul>			
25	T1 ('C ) 1 / C 1	Related records to be kept	0.1	0.1	0.2
35.	Identify water tank/ fuel	Identifying water tank/ fuel tank:	0.1	0.1	0.2
	tank	• Concept of water tank/ fuel tank			
		<ul> <li>Identification of water tank/ fuel tank</li> </ul>			
		<ul> <li>Function and application / uses of water tank/ fuel tank</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related precautions/safety</li> <li>Related records to be kept</li> </ul>			
36.	Identify hooter	Identifying hooter:	0.1	0.1	0.2
50.	identify nooter	<ul><li>Concept of hooter</li></ul>	0.1	0.1	0.2
		<ul><li>Identification of hooter</li></ul>			
		<ul><li>Function and application / uses</li></ul>			
		of hooter			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
37.	Identify burner ignition	Identifying burner ignition	0.1	0.1	0.2
37.	transformer	transformer:	0.1	0.1	0.2
	uunstormer	<ul><li>Concept of burner ignition</li></ul>			
		transformer			
		<ul> <li>Identification of burner ignition</li> </ul>			
		transformer			
		<ul> <li>Function and application / uses</li> </ul>			
		of burner ignition transformer			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
38.	Identify metal pipes/ water	Identifying metal pipes/ water	0.1	0.1	0.2
	tank	tank:			
		<ul> <li>Concept of metal pipes/ water</li> </ul>			
		tank			
		<ul> <li>Identification of metal pipes/</li> </ul>			
		water tank			
		<ul> <li>Function and application / uses</li> </ul>			
		of metal pipes/ water tank			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
39.	Identify heat proof gland	Identifying heat proof gland:	0.1	0.1	0.2
		<ul><li>Concept of heat proof gland</li></ul>			
		<ul> <li>Identification of heat proof</li> </ul>			
		gland			
		<ul><li>Function and application / uses</li></ul>			
		of heat proof gland			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
40.	Identify oil heater	<b>Identifying oil heater</b> :	0.1	0.1	0.2
		<ul><li>Concept of oil heater</li></ul>			
		<ul> <li>Identification of oil heater</li> </ul>			

	T	T =		ı	1	
		<ul> <li>Function and application / uses</li> </ul>				
		of oil heater				
		<ul> <li>Related precautions/safety</li> </ul>				
		<ul> <li>Related records to be kept</li> </ul>				
	Sub total:	•	4	6	10	
	Module: 2: Controlli	ng / maintaining / inspecting syst	ems	I		
		knowledge and skills related to maint		fuel		
	system; maintaining water system; and inspecting operating system.					
	Objectives:					
	To maintain fuel system	To inspect operating system				
	To maintain water system					
	Sub modules:	-				
	1. Fuel system	2. Water system				
		3. Inspect operating system				
	Sub r	module: 1: Fuel system				
		knowledge and skills related to maint	aining	fuel		
	system of boiler.		2	•		
	<b>Objectives:</b>					
	To read/Interpret fuel	■ To control /maintain fuel quality				
	system design	■ To control /maintain fuel pressure	<u>,</u>			
	To control/maintain fuel	<ul> <li>To control /maintain fuel quantity</li> </ul>				
	level	To control / mamain raci quantity				
	To control /maintain fuel					
	temperature					
		of a task statement, related technical	know	ladga		
		sk and time necessary for both the		_		
	practical aspects of the task.	sk and time necessary for both the	шеогу	and		
	1	s. (Th.) + 8 hrs. (Pr.) = 10 hrs. (Tot.)	Ti	me (h	re )	
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.	
1.	Read/Interpret fuel system	Reading/Interpreting fuel system	0.3	1.4	1.7	
1.	design	design:	0.5	1,-	1./	
	design	<ul><li>Concept of fuel system / system</li></ul>				
		design				
		Tunction and application of fact				
		system/ system design  Reading/interpreting fuel				
		Reading/interpreting ruer				
		system design				
		Related precautions/safety				
_		Related records to be kept	0.0	1.4	1.7	
2.	Control/maintain fuel level	Controlling/maintaining fuel	0.3	1.4	1.7	
		level:				
		• Concept of fuel level				
		• Function and application of fuel				
		level				
		• "Why" and "how" of				
		controlling and maintaining fuel				
		level				
		<ul> <li>Related precautions/safety</li> </ul>				
	1	<ul> <li>Related records to be kept</li> </ul>		l		

3. Control/maintain fuel temperature  Controlling/maintaining fuel temperature:  Concept of fuel temperature  Function and application of fuel temperature	0.3	1.3	1.6
<ul><li>Concept of fuel temperature</li><li>Function and application of fu</li></ul>			
<ul> <li>Function and application of fu</li> </ul>			
	ıel		
• "Why" and "how" of			
	101		
controlling and maintaining fu	161		
temperature			
Related precautions/safety			
Related records to be kept	0.2	1.0	1.6
4. Control/maintain fuel <u>Controlling/maintaining fuel</u>	0.3	1.3	1.6
quality:			
<ul> <li>Concept of fuel quality</li> </ul>			
Function and application of fu	ıel		
quality			
• "Why" and "how" of			
controlling and maintaining fu	ıel		
quality			
<ul> <li>Related precautions/safety</li> </ul>			
<ul> <li>Related records to be kept</li> </ul>			
5. Control/maintain fuel <u>Controlling/maintaining fuel</u>	0.4	1.3	1.7
pressure <u>pressure:</u>			
<ul><li>Concept of fuel pressure</li></ul>			
■ Function and application of fu	ıel		
pressure			
■ "Why" and "how" of			
controlling and maintaining fu	ıel		
pressure			
<ul> <li>Related precautions/safety</li> </ul>			
<ul> <li>Related records to be kept</li> </ul>			
6. Control/maintain fuel <u>Controlling/maintaining fuel</u>	0.4	1.3	1.7
quantity:			
<ul><li>Concept of fuel quantity</li></ul>			
■ Function and application of fu	ıel		
quantity			
• "Why" and "how" of	ıel		
• "Why" and "how" of controlling and maintaining fu			
controlling and maintaining fu			
controlling and maintaining fu quantity			
controlling and maintaining fu quantity  Related precautions/safety			
controlling and maintaining for quantity  Related precautions/safety Related records to be kept	2	8	10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:	2	8	10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system			10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system  Description: It includes the knowledge and skills related to ma			10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system  Description: It includes the knowledge and skills related to ma system of boiler.			10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system  Description: It includes the knowledge and skills related to man system of boiler.  Objectives:	intaining		10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system  Description: It includes the knowledge and skills related to ma system of boiler.  Objectives:  To read/Interpret water  To control/maintain water PH	intaining		10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system  Description: It includes the knowledge and skills related to mat system of boiler.  Objectives:  To read/Interpret water system design  To control/maintain water PH To control/maintain TDS	intaining		10
controlling and maintaining for quantity  Related precautions/safety Related records to be kept  Sub total:  Sub module: 2: Water system  Description: It includes the knowledge and skills related to ma system of boiler.  Objectives:  To read/Interpret water  To control/maintain water PH	intaining		10

	■ To control/maintain				
	water temperature				
	<ul> <li>To control hardness</li> </ul>				
	Tasks: Each task consists o	f a task statement, related technical	know	ledge	
	necessary to perform the tas	sk and time necessary for both the	theory	and	
	practical aspects of the task.	•			
		s. (Th.) + 8 hrs. (Pr.) = 10 hrs. (Tot.)	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Read/Interpret water system	Reading/Interpreting water system	0.3	1.0	1.3
	design	design:			
		<ul> <li>Concept of water system /</li> </ul>			
		system design			
		<ul> <li>Function and application of</li> </ul>			
		water system/ system design			
		<ul> <li>Reading/interpreting water</li> </ul>			
		system design			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Control/maintain water level	Controlling/maintaining water	0.3	1.0	1.3
	Control manitain water is ver	level:	0.5	1.0	1.5
		Concept of water level			
		<ul><li>Function and application of</li></ul>			
		water level			
		"Why" and "how" of			
		controlling and maintaining			
		water level			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Control/maintain water	Controlling/maintaining water	0.3	1.0	1.3
] .	temperature	temperature:	0.5	1.0	1.5
	temperature	<ul><li>Concept of water temperature</li></ul>			
		<ul><li>Function and application of</li></ul>			
		water temperature			
		*"Why" and "how" of			
		controlling and maintaining			
		water temperature			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Control hardness of water	Controlling hardness:	0.3	1.0	1.3
	Control hardness of water	<ul> <li>Concept of hardness of water</li> </ul>	0.5	1.0	1.5
		<ul> <li>Function and application of</li> </ul>			
		hardness of water			
		"Why" and "how" of			
		controlling and maintaining			
		hardness of water			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Control/maintain water PH	Controlling/maintaining water	0.2	1.0	1.2
<i>J</i> .	Control mantain water 111	PH:	0.2	1.0	1.4
		Concept of water PH			
		Concept of water I II	1		

	1 11				
I	<ul> <li>To inspect steam pipe</li> </ul>	<ul> <li>To inspect water temperature</li> </ul>			
	distribution system	To inspect electric wiring			
	■ To inspect steam	To inspect reset bottom			
	To inspect safety devices	To inspect leakage of electricity			
	To inspect water system	To inspect current consumption in	ndicate	or	
	system	To inspect traps and NRV/PRV	••		
	<ul> <li>To inspect electric</li> </ul>	To inspect emergency switches			
	<ul> <li>To inspect fuel system</li> </ul>	<ul> <li>To inspect sensors</li> </ul>			
	Objectives:				
	operating system of boiler.				
	_	e knowledge and skills related to	inspe	ecting	
	Sub module:	3: Inspecting operating system			
	Sub total:		2	8	10
		<ul> <li>Related records to be kept</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		water quantity			
		controlling and maintaining			
		• "Why" and "how" of			
		water quantity			
		<ul> <li>Function and application of</li> </ul>			
"		• Concept of water quantity	3.2		
8.	Maintain water quantity	Maintaining water quantity:	0.2	1.0	1.2
		<ul> <li>Related records to be kept</li> </ul>			
		<ul><li>Related precautions/safety</li></ul>			
		water pressure			
		controlling and maintaining			
		water pressure "Why" and "how" of			
		i unction and application of			
		<ul> <li>Concept of water pressure</li> <li>Function and application of</li> </ul>			
	pressure	pressure:			
7.	Control/maintain water	Controlling/maintaining water	0.2	1.0	1.2
		Related records to be kept	0.0	1.0	1.2
		<ul> <li>Related precautions/safety</li> </ul>			
		TDS			
		controlling and maintaining			
		• "Why" and "how" of			
		TDS			
		<ul> <li>Function and application of</li> </ul>			
		<ul><li>Concept of TDS</li></ul>			
6.	Control/maintain TDS	Controlling/maintaining TDS:	0.2	1.0	1.2
		<ul> <li>Related records to be kept</li> </ul>			
		<ul><li>Related precautions/safety</li></ul>			
		controlling and maintaining water PH			
		"Why" and "how" of			
		water PH			

■ To inspect steam	<ul> <li>To inspect level of fuel indicator</li> </ul>	
drainage	<ul> <li>To inspect fuel release valve</li> </ul>	
<ul><li>To inspect steam pipe</li></ul>	<ul><li>To inspect fuel valve</li></ul>	
line and valves	<ul> <li>To inspect fuel pressure</li> </ul>	
<ul><li>To inspect steam</li></ul>	<ul> <li>To inspect fuel pump</li> </ul>	
pressure	<ul> <li>To inspect RYB voltage indicator</li> </ul>	
<ul><li>To inspect steam</li></ul>	<ul> <li>To inspect blow down valves</li> </ul>	
temperature	<ul> <li>To inspect safety valves</li> </ul>	
<ul> <li>To inspect water tank</li> </ul>	<ul> <li>To inspect indicators and hooters</li> </ul>	
<ul> <li>To inspect water pipe</li> </ul>	_	
line and valves		
<ul> <li>To inspect y-Steiner</li> </ul>		
<ul> <li>To inspect water level</li> </ul>		
<ul> <li>To inspect non return</li> </ul>		
valve		
<ul> <li>To inspect water level</li> </ul>		
indicator		
<ul> <li>To inspect case fire</li> </ul>		
Tasks: Each task consists of	f a task statement, related technical knowledge	_
necessary to perform the tas	sk and time necessary for both the theory and	
practical aspects of the task.	·	
	<u> </u>	_

	7 hi	rs. $(Th.) + 28$ hrs. $(Pr.) = 35$ hrs. $(Tot.)$	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Inspect fuel system	<ul><li>Inspecting fuel system:</li><li>Concept, function and</li></ul>	0.2	0.8	1.0
		application of fuel system			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting fuel system			
		<ul><li>Inspecting the fuel system</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Inspect electric system	<b>Inspecting electric system:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of electric system			
		<ul><li>Principles and procedures for</li></ul>			
		inspecting electric system			
		<ul><li>Inspecting the electric system</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Inspect water system	<b>Inspecting water system:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of water system			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting water system			
		<ul><li>Inspecting the water system</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Inspect safety devices	<b>Inspecting safety devices:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of safety devices			

	T	- Duta-tal- 1 1 C	1		
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting safety devices			
		<ul> <li>Inspecting the safety devices</li> </ul>			
		Related precautions/safety			
	T	Related records to be kept	0.2	0.0	1.0
5.	Inspect steam distribution	Inspecting steam distribution	0.2	0.8	1.0
	system	system:			
		Concept, function and			
		application of steam distribution			
		system  Principles and procedures for			
i		<ul> <li>Principles and procedures for inspecting steam distribution</li> </ul>			
		system			
		<ul><li>Inspecting the steam</li></ul>			
		distribution system			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Inspect steam pipe line drain	Inspecting steam pipe line drain	0.2	0.8	1.0
0.	water	water:	0.2	0.0	1.0
	Water	Concept, function and			
		application of steam pipe line			
		drain water			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting steam pipe line drain			
		water			
		<ul> <li>Inspecting the steam pipe line</li> </ul>			
		drain water			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Inspect steam drainage	<b>Inspecting steam drainage:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of steam drainage			
		<ul><li>Principles and procedures for</li></ul>			
		inspecting steam drainage			
		<ul> <li>Inspecting the steam drainage</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept	0.2	0.0	1.0
8.	Inspect steam pipe line and	Inspecting steam pipe line and	0.2	0.8	1.0
	valves	valves:			
		• Concept, function and			
		application of steam pipe line			
		and valves  Principles and procedures for			
		Timespies and procedures for			
		inspecting steam pipe line and valves			
		<ul> <li>Inspecting the steam pipe line and valves</li> </ul>			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related precautions/safety</li> <li>Related records to be kept</li> </ul>			
9.	Inspect steam pressure	Inspecting steam pressure:	0.2	0.8	1.0
7.	mopeet steam pressure	morecome attain pressure.	0.4	0.0	1.0

■ Concept, function and application of steam pressure ■ Principles and procedures for inspecting steam pressure ■ Inspecting the steam pressure ■ Related precautions/safety ■ Related records to be kept  10. Inspect steam temperature ■ Concept, function and application of steam temperature ■ Principles and procedures for inspecting steam temperature ■ Inspecting steam temperature ■ Inspecting the steam ■ Inspecting the steam
Principles and procedures for inspecting steam pressure Inspecting the steam pressure Related precautions/safety Related records to be kept  Inspecting steam temperature: Concept, function and application of steam temperature Principles and procedures for inspecting steam temperature
inspecting steam pressure Inspecting the steam pressure Related precautions/safety Related records to be kept  Inspecting steam temperature: Concept, function and application of steam temperature Principles and procedures for inspecting steam temperature
■ Inspecting the steam pressure ■ Related precautions/safety ■ Related records to be kept  10. Inspect steam temperature ■ Concept, function and application of steam temperature ■ Principles and procedures for inspecting steam temperature
■ Inspecting the steam pressure ■ Related precautions/safety ■ Related records to be kept  10. Inspect steam temperature ■ Concept, function and application of steam temperature ■ Principles and procedures for inspecting steam temperature
■ Related records to be kept  10. Inspect steam temperature  Inspecting steam temperature: ■ Concept, function and application of steam temperature ■ Principles and procedures for inspecting steam temperature
■ Related records to be kept  10. Inspect steam temperature  Inspecting steam temperature: ■ Concept, function and application of steam temperature ■ Principles and procedures for inspecting steam temperature
10. Inspect steam temperature    Inspecting steam temperature:   Concept, function and application of steam temperature:   Principles and procedures for inspecting steam temperature
<ul> <li>Concept, function and application of steam temperature</li> <li>Principles and procedures for inspecting steam temperature</li> </ul>
application of steam temperature Principles and procedures for inspecting steam temperature
temperature Principles and procedures for inspecting steam temperature
Principles and procedures for inspecting steam temperature
inspecting steam temperature
- inspecting the steam
temperature
■ Related precautions/safety
Related records to be kept
11. Inspect water tank Inspecting water tank: 0.2 0.8 1.0
■ Concept, function and
application of water tank
Principles and procedures for
inspecting water tank
■ Inspecting the water tank
Related precautions/safety
Related records to be kept
12. Inspect water pipe line and Inspecting water pipe line and 0.2 0.8 1.0
valves valves:
■ Concept, function and
application of water pipe line
and valves
<ul> <li>Principles and procedures for</li> </ul>
inspecting water pipe line and
valves
valves
valves
valves  Inspecting the water pipe line
valves  Inspecting the water pipe line and valves
valves  Inspecting the water pipe line and valves  Related precautions/safety
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept  Inspecting y-Steiner:  0.2 0.8 1.0
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept  Inspecting y-Steiner: Concept, function and
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept  Inspecting v-Steiner: Concept, function and application of y-Steiner
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept  Inspecting v-Steiner: Concept, function and application of y-Steiner Principles and procedures for
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept  Inspecting y-Steiner: Concept, function and application of y-Steiner Principles and procedures for inspecting y-Steiner
valves Inspecting the water pipe line and valves Related precautions/safety Related records to be kept  Inspecting v-Steiner: Concept, function and application of y-Steiner Principles and procedures for inspecting y-Steiner Inspecting the water pipe line and valves  Related precautions/safety Inspecting v-Steiner: Inspecting the y-Steiner
valves  Inspecting the water pipe line and valves  Related precautions/safety Related records to be kept  Inspecting y-Steiner: Concept, function and application of y-Steiner Principles and procedures for inspecting y-Steiner Inspecting the y-Steiner Related precautions/safety
valves Inspecting the water pipe line and valves Related precautions/safety Related records to be kept  Inspecting y-Steiner: Concept, function and application of y-Steiner Principles and procedures for inspecting y-Steiner Inspecting the y-Steiner Inspecting the y-Steiner Related precautions/safety Related records to be kept  Inspecting water level: Concept, function and
valves Inspecting the water pipe line and valves Related precautions/safety Related records to be kept  Inspecting y-Steiner: Concept, function and application of y-Steiner Inspecting y-Steiner Inspecting the y-Steiner Related precautions/safety Related precautions/safety Related precautions/safety Related records to be kept  Inspecting water level: Concept, function and application of water level
valves Inspecting the water pipe line and valves Related precautions/safety Related records to be kept  Inspecting y-Steiner: Concept, function and application of y-Steiner Principles and procedures for inspecting y-Steiner Inspecting the y-Steiner Inspecting the y-Steiner Related precautions/safety Related records to be kept  Inspecting water level: Concept, function and

	T	■ Inspecting the water level	1	1	
		mspecting the water level			
		Related precautions/safety			
1.5		Related records to be kept	0.2	0.0	1.0
15.	Inspect non return valve	<u>Inspecting non return valve</u> :	0.2	0.8	1.0
		• Concept, function and			
		application of			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting			
		<ul> <li>Inspecting the</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
16.	Inspect water level indicator	<b>Inspecting water level indicator:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of non return valve			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting non return valve			
		<ul><li>Inspecting the non return valve</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
17.	Inspect case fire	<b>Inspecting case fire:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of case fire			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting case fire			
		<ul><li>Inspecting the case fire</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
18.	Inspect sensors	<b>Inspecting sensors:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of sensors			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting sensors			
		<ul><li>Inspecting the sensors</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
19.	Inspect emergency switches	<b>Inspecting emergency switches</b> :	0.2	0.8	1.0
		<ul> <li>Concept, function and</li> </ul>			
		application of emergency			
		switches			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting emergency switches			
		<ul> <li>Inspecting the emergency</li> </ul>			
		switches			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept			
20.	Inspect traps and NRV/PRV	Inspecting traps and NRV/PRV:	0.2	0.8	1.0
	r	• Concept, function and			
		application of traps and			
		NRV/PRV			
		<ul><li>Principles and procedures for</li></ul>			
	1	process for	1	I	1

	Т		1	1	
		inspecting traps and NRV/PRV			
		<ul> <li>Inspecting the traps and</li> </ul>			
		NRV/PRV			
		Related precautions/safety			
21	T	Related records to be kept	0.2	0.0	1.0
21.	Inspect current consumption	Inspecting current consumption	0.2	0.8	1.0
	indicator	indicator:			
		Concept, function and			
		application of current			
		consumption indicator			
		Principles and procedures for inspecting current consumption			
		inspecting current consumption indicator			
		<ul><li>Inspecting the current</li></ul>			
		consumption indicator			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
22.	Inspect leakage of electricity	Inspecting leakage of electricity:	0.2	0.8	1.0
22.	inspect leakage of electricity	<ul> <li>Concept, function and</li> </ul>	0.2	0.0	1.0
		application of leakage of			
		electricity			
		<ul><li>Principles and procedures for</li></ul>			
		inspecting leakage of electricity			
		<ul> <li>Inspecting the leakage of</li> </ul>			
		electricity			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
23.	Inspect reset bottom	<b>Inspecting reset bottom:</b>	0.2	0.8	1.0
		<ul><li>Concept, function and</li></ul>			
		application of reset bottom			
		<ul><li>Principles and procedures for</li></ul>			
		inspecting reset bottom			
		<ul><li>Inspecting the reset bottom</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
24.	Inspect electric wiring	<b>Inspecting electric wiring:</b>	0.2	0.8	1.0
		Concept, function and			
		application of electric wiring			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting electric wiring			
		Inspecting the electric wiring			
		Related precautions/safety			
25	Inspect water temperature	Related records to be kept	0.2	0.0	1.0
25.	Inspect water temperature	<ul><li>Inspecting water temperature:</li><li>Concept, function and</li></ul>	0.2	0.8	1.0
		application of water temperature			
		<ul><li>Principles and procedures for</li></ul>			
		inspecting water temperature			
		<ul><li>Inspecting water temperature</li><li>Inspecting the water</li></ul>			
		temperature			
	<u> </u>	tomporature	1	l	

<ul><li>Related precautions/safety</li><li>Related records to be kept</li></ul>	0.2		
- Related records to be kept	0.2		
		0.8	1.0
26. Inspect fuel pipe line  Inspecting fuel pipe line:  Concept function and	0.2	0.8	1.0
Concept, function and application of fuel pipe line			
<ul> <li>Principles and procedures for inspecting fuel pipe line</li> </ul>			
Inspecting the fuel pipe line  Inspecting the fuel pipe line			
Related precautions/safety			
Related precautions/sarety  Related records to be kept			
27. Inspect level of fuel Inspecting level of fuel indicator:	0.2	0.8	1.0
indicator Concept, function and	0.2	0.8	1.0
application of level of fuel			
indicator			
Principles and procedures for			
inspecting level of fuel indicato	r		
Inspecting the level of fuel	1		
indicator			
Related precautions/safety			
Related records to be kept			
28. Inspect fuel release valve Inspecting fuel release valve:	0.2	0.8	1.0
Concept, function and	0.2	0.0	1.0
application of fuel release valve			
Principles and procedures for	,		
inspecting fuel release valve			
Inspecting the fuel release valve	<u>.</u>		
Related precautions/safety			
Related records to be kept			
29. Inspect fuel valve Inspecting fuel valve:	0.2	0.8	1.0
Concept, function and	0.2	0.0	1.0
application of fuel valve			
Principles and procedures for			
inspecting fuel valve			
<ul> <li>Inspecting the fuel valve</li> </ul>			
Related precautions/safety			
Related records to be kept			
30. Inspect fuel pressure <u>Inspecting fuel pressure:</u>	0.2	0.8	1.0
Concept, function and			
application of fuel pressure			
Principles and procedures for			
inspecting fuel pressure			
<ul> <li>Inspecting the fuel pressure</li> </ul>			
Related precautions/safety			
Related records to be kept			
31. Inspect fuel pump Inspecting fuel pump:	0.2	0.8	1.0
Concept, function and			
application of fuel pump			
Principles and procedures for			
inspecting fuel pump			
■ Inspecting the fuel pump			

		Related precautions/safety		Τ	
		Related precautions/sarety			
22	7	Related records to be kept	0.0	0.0	1.0
32.	Inspect RYB voltage	<u>Inspecting RYB voltage indicator</u> :	0.2	0.8	1.0
	indicator	<ul> <li>Concept, function and</li> </ul>			
		application of RYB voltage			
		indicator			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting RYB voltage			
		indicator			
		<ul> <li>Inspecting the RYB voltage</li> </ul>			
		indicator			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
33.	Inspect blow down valves	<b>Inspecting blow down valves:</b>	0.2	0.8	1.0
		<ul> <li>Concept, function and</li> </ul>			
		application of blow down			
		valves			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting blow down valves			
		<ul> <li>Inspecting the blow down</li> </ul>			
		valves			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
34.	Inspect safety valves	<b>Inspecting safety valves:</b>	0.2	0.8	1.0
		<ul> <li>Concept, function and</li> </ul>			
		application of safety valves			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting safety valves			
		<ul> <li>Inspecting the safety valves</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept		<u> </u>	
35.	Inspect indicators and	Inspecting indicators and	0.2	0.8	1.0
	hooters	hooters:			
		<ul> <li>Concept, function and</li> </ul>			
		application of indicators and			
		hooters			
		<ul> <li>Principles and procedures for</li> </ul>			
		inspecting indicators and			
		hooters			
		<ul> <li>Inspecting the indicators and</li> </ul>			
		hooters			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>	<u> </u>		
	Sub total:		7	28	35
		dard operation procedures (SOP			
	Description: It includes the	e knowledge and skills related to ca	arryin	g out	
1				6	
	standard operation procedures				

	manuals/ guidelines/ books /instructions/	To close valve of drain			
	0 0 0 0 , 0 0 0 0 0 ,	To open the supply valve			
	drawing/ panel diagram	To turn off boiler			
	<ul> <li>To check fuel</li> </ul>	To close the supply valve			
	<ul> <li>To check valve of fuel</li> </ul>	To open the blow down valve			
	To check valve of water	To check supply pressure			
	To check electricity	To close the blow down valve			
	To switch on the fill	To re-switch on fill position			
	position	To check the temperature display			
	<ul> <li>To switch on the boiler</li> </ul>	To shunt down boiler equipment			
	To check drain water				
	To switch on the fire				
	position				
		f a task statement, related technical		_	
	¥ - 2	sk and time necessary for both the	theory	and	
	practical aspects of the task.	(T) (C) (D) (D) (T) (1)	- TD*		
CNI		(Th.) + 66 hrs. (Pr.) = 82 hrs. (Tot.)		me (h	
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Read/interpret boiler	Reading/interpreting boiler	0.8	3.3	4.1
	manuals/ guidelines/ books	manuals/ guidelines/ books			
	/instructions/ drawing/ panel	/instructions/ drawing/ panel			
	diagram	diagram:			
		Concept and application or uses			
		of boiler manuals/ guidelines/			
		books /instructions/ drawing/			
		panel diagram			
		<ul> <li>Reading/interpreting boiler</li> </ul>			
		manuals/ guidelines/ books			
		/instructions/ drawing/ panel			
		diagram			
		<ul> <li>Related precautions</li> </ul>			
		Related records to be kept	0.0	2.2	4.1
2.	Check fuel	Checking fuel:	0.8	3.3	4.1
		<ul> <li>Concept and application/uses of</li> </ul>			
		fuel			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking fuel			
		• Checking fuel			
		Related precautions/safety			
		Related records to be kept	0.0	2.2	4.1
3.	Check valve of fuel	Checking valve of fuel:	0.8	3.3	4.1
		• Concept and application/uses of			
		valve of fuel			
		Principle and procedures for      Principle and procedures for			
		checking valve of fuel			
		Checking valve of fuel			
		Related precautions/safety			
1	Charle valve of water	Related records to be kept	0.0	2.2	/ 1
4.	Check valve of water	Checking valve of water:  Concept and application/uses of	0.8	3.3	4.1
		<ul><li>Concept and application/uses of</li></ul>		<u> </u>	

	T	1 6	1		ı
		valve of water			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking valve of water			
		<ul><li>Checking valve of water</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Check electricity	<b>Checking electricity:</b>	0.8	3.3	4.1
		<ul><li>Concept and application/uses of</li></ul>			
		electricity			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking electricity			
		<ul> <li>Checking electricity</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Switch on the fill position	<b>Switching on the fill position</b> :	0.8	3.3	4.1
		<ul> <li>Concept of switching on the fill</li> </ul>			
		position			
		• "Why" and "how" of switching			
		on the fill position			
		<ul> <li>Switching on the fill position</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Switch on the boiler	<b>Switching on the boiler:</b>	0.8	3.3	4.1
		<ul> <li>Concept of switching on the</li> </ul>			
		boiler			
		• "Why" and "how" of switching			
		on the boiler			
		<ul><li>Switching on the boiler</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
8.	Check drain water	<b>Checking drain water:</b>	0.8	3.3	4.1
		<ul> <li>Concept and application/uses of</li> </ul>			
		drain water			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking drain water			
		<ul><li>Checking drain water</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
9.	Switch on the fire position	<b>Switching on the fire position:</b>	0.8	3.3	4.1
		<ul> <li>Concept of switching on the fire</li> </ul>			
		position			
		• "Why" and "how" of switching			
		on the fire position			
		<ul> <li>Switching on the fill position</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
10.	Check the temperature	Checking the temperature:	0.8	3.3	4.1
	_	<ul> <li>Concept and application/uses of</li> </ul>			
		temperature			
		<ul> <li>Principle and procedures for</li> </ul>			
	•			•	•

		1 1	1	1	1
		checking temperature			
		Checking temperature			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept	0.0		
11.	Close valve of drain	Closing valve of drain:	0.8	3.3	4.1
		<ul> <li>Concept of closing valve of</li> </ul>			
		drain			
		• "Why" and "how" of closing			
		valve of drain			
		<ul> <li>Closing valve of drain</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept			
12.	Open the supply valve	<b>Opening the supply valve:</b>	0.8	3.3	4.1
		<ul><li>Concept of opening the supply</li></ul>			
		valve			
		• "Why" and "how" of opening			
		the supply valve			
		<ul> <li>Opening the supply valve</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
13.	Turn off boiler	<b>Turning off boiler:</b>	0.8	3.3	4.1
		<ul> <li>Concept of turning off boiler</li> </ul>			
		• "Why" and "how" of turning off			
		boiler			
		<ul><li>Turning off boiler</li></ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
14.	Close the supply valve	Closing the supply valve:	0.8	3.3	4.1
		<ul><li>Concept of closing the supply</li></ul>			
		valve			
		• "Why" and "how" of closing			
		the supply valve			
		<ul> <li>Closing the supply valve</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
15.	Open the blow down valve	<b>Opening the blow down valve:</b>	0.8	3.3	4.1
		<ul><li>Concept of opening the blow</li></ul>			
		down valve			
		• "Why" and "how" of opening			
		the blow down valve			
		<ul> <li>Opening the blow down valve</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
16.	Check supply pressure	Checking supply pressure:	0.8	3.3	4.1
		<ul> <li>Concept and application/uses of</li> </ul>			
		supply pressure			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking supply pressure			
		<ul> <li>Checking supply pressure</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			

		Related records to be kept			
17.	Close the blow down valve	Closing the blow down valve:	0.8	3.3	4.1
		<ul> <li>Concept of closing the blow</li> </ul>			
		down valve			
		• "Why" and "how" of closing			
		the blow down valve			
		<ul> <li>Closing the blow down valve</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
18.	Re-switch on fill position	Re-switching on fill position:	0.8	3.3	4.1
	1	<ul> <li>Concept of re-switching on fill</li> </ul>			
i		position			
		Why" and "how" of re-			
		switching on fill position			
		<ul> <li>Re-switching on fill position</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
19.	Check the temperature	Checking the temperature	0.8	3.3	4.1
	display	display:			
		<ul><li>Concept and application/uses of</li></ul>			
		temperature display			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking temperature display			
		<ul> <li>Checking temperature display</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
20.	Shunt down boiler	<b>Shunting down boiler equipment:</b>	0.8	3.3	4.1
	equipment	<ul> <li>Concept of shunting down</li> </ul>			
		boiler equipment			
		• "Why" and "how" of shunting			
		down boiler equipment			
		<ul> <li>Shunting down boiler</li> </ul>			
		equipment			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:	1	16	66	82
		ule: 4: Efficiency tests	1	1	
		e knowledge and skills related to c	arrvin	g Out	
	efficiency tests related to boil	•	3	J	
	Objectives:				
	■ To conduct air pressure	To conduct fuel temperature test			
	test	<ul> <li>To conduct ruer temperature test</li> <li>To conduct air temperature test</li> </ul>			
	<ul><li>To conduct fuel pressure</li></ul>	<ul><li>To conduct an temperature test</li><li>To conduct voltage</li></ul>			
	test	<ul><li>To conduct voltage</li><li>To conduct current</li></ul>			
	To conduct steam	To conduct current			
	pressure test				
	To conduct steam				
	temperature test  Tosks: Fach task consists of	f a tack statement related technical	know	ladaa	
	Lasks: Each task consists o	f a task statement, related technical	KHOW	ieuge	

	practical aspects of the task.	(D) 111 (D) 111 (D)			
		$\frac{1}{1}$ (Th.) + 12 hrs. (Pr.) = 16 hrs. (Tot.)		me (h	
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot
1.	Conduct air pressure test	<ul> <li>Conducting air pressure test:</li> <li>Concept of air pressure test</li> <li>Application/uses of air pressure test</li> <li>Principle and procedures for conducting air pressure test</li> </ul>	0.5	1.5	2
2.	Conduct fuel pressure test	<ul> <li>Conducting air pressure test</li> <li>Related precautions/safety</li> <li>Related records to be kept</li> <li>Conducting fuel pressure test:</li> </ul>	0.5	1.5	2
۷.	Conduct ruer pressure test	<ul> <li>Concept of fuel pressure test</li> <li>Application/uses of fuel pressure test</li> <li>Principle and procedures for conducting fuel pressure test</li> <li>Conducting fuel pressure test</li> <li>Related precautions/safety</li> <li>Related records to be kept</li> </ul>			2
3.	Conduct steam pressure test	<ul> <li>Conducting steam pressure test:</li> <li>Concept of steam pressure test</li> <li>Application/uses of steam pressure test</li> <li>Principle and procedures for conducting steam pressure test</li> <li>Conducting steam pressure test</li> <li>Related precautions/safety</li> <li>Related records to be kept</li> </ul>	0.5	1.5	2
4.	Conduct steam temperature test	<ul> <li>Conducting steam temperature test:         <ul> <li>Concept of steam temperature test</li> <li>Application/uses of steam temperature test</li> <li>Principle and procedures for conducting steam temperature test</li> <li>Conducting steam temperature test</li> <li>Related precautions/safety</li> <li>Related records to be kept</li> </ul> </li> </ul>	0.5	1.5	2
5.	Conduct fuel temperature test	<ul> <li>Conducting fuel temperature test:</li> <li>Concept of fuel temperature test</li> <li>Application/uses of fuel temperature test</li> <li>Principle and procedures for conducting fuel temperature test</li> </ul>	0.5	1.5	2

	T		1	1	1
		<ul> <li>Conducting fuel temperature</li> </ul>			
		test			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Conduct air temperature test	<b>Conducting air temperature test:</b>	0.5	1.5	2
		<ul> <li>Concept of air temperature test</li> </ul>			
		<ul> <li>Application/uses of air</li> </ul>			
		temperature test			
		<ul> <li>Principle and procedures for</li> </ul>			
		conducting air temperature test			
		<ul> <li>Conducting air temperature test</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Check voltage	<b>Checking voltage:</b>	0.5	1.5	2
		<ul><li>Concept and application/uses of</li></ul>			
		voltage			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking voltage			
		<ul><li>Checking voltage</li></ul>			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
8.	Check current	Checking current:	0.5	1.5	2
		<ul><li>Concept and application/uses of</li></ul>			
		current			
		<ul> <li>Principle and procedures for</li> </ul>			
		checking current			
		<ul><li>Checking current</li></ul>			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:		4	12	16
	Module: 5: Sei	rvicing, repair and maintenance			
	<b>Description:</b> It includes the k	nowledge and skills related to carrying	gout		
	_	cing; troubleshooting; and repair, repl		nt	
	and maintenance of boilers.				
	<b>Objectives:</b>				
	To carry out preventive	<ul> <li>To carry out troubleshooting of b</li> </ul>	oiler		
	maintenance of boiler	To carry out repair, replacement			
	<ul> <li>To carry out servicing of</li> </ul>	maintenance of boiler			
	boiler				
	Sub modules:				
	1. Preventive maintenance	3. Troubleshooting			
	2. Servicing	4. Repair, replacement and mainten	ance		
	<u> </u>	e: 1: Preventive maintenance			
		nowledge and skills related to carrying	r Olif		-
	preventive maintenance of bo	•	Sout		
	Objectives:	11013.			
	<u> </u>	I - M			
	■ To tighten loosen nut	To perform preventive maintenar	ice of		
	and bolts	economizer			
	<ul> <li>To perform preventive</li> </ul>	<ul><li>To clean water tank</li></ul>			

		- T1 f1 (1-			ı
	maintenance of pipe	To clean fuel tank			
	lines	To clean furnace	1 1	1	
	<ul> <li>To perform lubrication</li> </ul>	■ To remove dust/corrosion from p	anei bo	oard	
	<ul> <li>To perform preventive maintenance of motor</li> </ul>				
	belts				
	<ul><li>To perform preventive</li></ul>				
	maintenance of fuel				
	filter				
		f a task statement, related technical	lznow	ladga	
		sk and time necessary for both the			
	practical aspects of the task.	sk and time necessary for both the	tileoi y	anu	
		(Th.) + 24  hrs.  (Pr.) = 30  hrs.  (Tot.)	Ti	me (h	rc )
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Tighten loosen nut and bolts	Tightening loosen nut and bolts:	0.6	2.4	3
1.	righten loosen hat and boits	Functions of nut and bolts	0.0	2.7	3
		<ul> <li>Identification of nut and bolts</li> </ul>			
		/loosen nut and bolts			
		"Why" and "how" of tightening			
		loosen nut and bolts			
		<ul> <li>Tightening loosen nut and bolts</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Perform preventive	Performing preventive	0.6	2.4	3
	maintenance of pipe lines	maintenance of pipe lines:			
	1 1	<ul> <li>Concept and need of preventive</li> </ul>			
		maintenance of pipe lines			
		<ul> <li>Principles and procedures of</li> </ul>			
		preventive maintenance of pipe			
		lines			
		<ul><li>Performing preventive</li></ul>			
		maintenance of pipe lines			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Perform lubrication	<b>Performing lubrication:</b>	0.6	2.4	3
		<ul><li>Concept and need of lubrication</li></ul>			
		<ul><li>Principles and procedures of</li></ul>			
		lubrication			
		<ul> <li>Performing lubrication</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept	0.1	- 1	
4.	Perform preventive	Performing preventive	0.6	2.4	3
	maintenance of motor belts	maintenance of motor belts:			
		• Concept and need of preventive			
		maintenance of motor belts			
		Principles and procedures of  proventive maintenance of			
		preventive maintenance of			
		motor belts  Performing proventive			
		Performing preventive  maintanance of motor balts			
		maintenance of motor belts			

	1	■ Related precautions/safety			
		related precautions/surety			
5.	Daufaum massanting	Related records to be kept	0.6	2.4	3
٥.	Perform preventive maintenance of fuel filter	Performing preventive	0.0	2.4	3
	maintenance of fuel fifter	maintenance of fuel filter:			
		• Concept and need of preventive			
		maintenance of fuel filter			
		<ul> <li>Principles and procedures of</li> </ul>			
		preventive maintenance of fuel			
		filter			
		<ul> <li>Performing preventive</li> </ul>			
		maintenance of fuel filter			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept	0.6	2.4	2
6.	Perform preventive	<u>Performing preventive</u>	0.6	2.4	3
	maintenance of economizer	maintenance of economizer:			
		<ul> <li>Concept and need of preventive</li> </ul>			
		maintenance of economizer			
		<ul> <li>Principles and procedures of</li> </ul>			
		preventive maintenance of			
		economizer			
		<ul> <li>Performing preventive</li> </ul>			
		maintenance of economizer			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept			
7.	Clean water tank	Cleaning water tank:	0.6	2.4	3
		• Functions of water tank			
		<ul> <li>Identification of water tank to</li> </ul>			
		be cleaned			
		• "Why" and "how" of cleaning			
		water tank			
		<ul> <li>Cleaning water tank</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		Related records to be kept			
8.	Clean fuel tank	Cleaning fuel tank:	0.6	2.4	3
		• Functions of fuel tank			
		<ul> <li>Identification of fuel tank to be</li> </ul>			
		cleaned			
		• "Why" and "how" of cleaning			
		fuel tank			
		<ul> <li>Cleaning fuel tank</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>	_		_
9.	Clean furnace	Cleaning furnace:	0.6	2.4	3
		• Functions of furnace			
		<ul> <li>Identification of furnace to be</li> </ul>			
		cleaned			
		• "Why" and "how" of cleaning			
		furnace			
		<ul> <li>Cleaning furnace</li> </ul>			
		<ul> <li>Related precautions/safety</li> </ul>			

		<ul> <li>Related records to be kept</li> </ul>			
10.	Remove dust/corrosion from panel board	Removing dust/corrosion from panel board:	0.6	2.4	3
	1	<ul> <li>Identification of dust/corrosion</li> </ul>			
		of panel board			
		• "Why" and "how" of removing			
		dust/corrosion from panel board			
		<ul> <li>Removing dust/corrosion from</li> </ul>			
		panel board			
		<ul><li>Related precautions/safety</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:		6	24	30
	Sub	module: 2: Servicing			
	<b>Description:</b> It includes the k	nowledge and skills related to carrying	out		
	servicing of boilers.				
	<b>Objectives:</b>				
	<ul> <li>To perform servicing of</li> </ul>	<ul> <li>To perform servicing of economize</li> </ul>	zer		
	tank(oil and water)	<ul> <li>To perform servicing of panel box</li> </ul>		re	
	<ul> <li>To perform servicing of</li> </ul>	and cables			
	water pump	To perform servicing of float valve			
	<ul> <li>To perform Servicing of</li> </ul>	■ To perform servicing of vessel descaling			
	sensor	<ul> <li>To perform servicing of strainer (</li> </ul>	fuel ar	nd	
	<ul> <li>To perform servicing of</li> </ul>	water)			
	contactor and relay	■ To perform servicing of tube/coil			
	<ul> <li>To perform servicing of</li> </ul>	<ul> <li>To perform servicing of looking §</li> </ul>	-		
	chimney	<ul> <li>To perform servicing of photo cel</li> </ul>	1		
	<ul> <li>To perform servicing of</li> </ul>	<ul> <li>To perform servicing of nozzle</li> </ul>			
	pressure release valve	<ul> <li>To perform servicing of electric r</li> </ul>			
	(PRV)	■ To perform Servicing of limit swi	itch		
	<ul><li>To perform servicing of NRV</li></ul>				
	<ul> <li>To perform servicing of</li> </ul>				
	steam trap				
	<ul> <li>To perform servicing of</li> </ul>				
	safety valve				
		f a task statement, related technical		_	
	-	sk and time necessary for both the	theory	and	
	practical aspects of the task.		1		
ar.		(Th.) + 32  hrs.  (Pr.) = 40  hrs.  (Tot.)		me (h	
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Perform servicing of	Performing servicing of tank(oil	0.4	1.6	2
	tank(oil and water)	and water):			
		• Concept and need for the			
		servicing of the tank(oil and			
		water)			
		Principles and procedures for			
		the servicing of the tank(oil and			
		water)			
		<ul><li>Servicing of the tank(oil and</li></ul>			

	T		I		
		water)			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Perform servicing of water	Performing servicing of water	0.4	1.6	2
	pump	pump:			
		<ul> <li>Concept and need for the</li> </ul>			
		servicing of the water pump			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the water pump			
		<ul> <li>Servicing of the water pump</li> </ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Perform Servicing of sensor	<b>Performing Servicing of sensor</b> :	0.4	1.6	2
		<ul> <li>Concept and need for the</li> </ul>			
		servicing of the sensor			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the sensor			
		<ul><li>Servicing of the sensor</li></ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Perform servicing of	Performing servicing of contactor	0.4	1.6	2
	contactor and relay	and relay:			
		<ul> <li>Concept and need for the</li> </ul>			
		servicing of the contactor and			
		relay			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the contactor			
		and relay			
		<ul> <li>Servicing of the contactor and</li> </ul>			
		relay			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Perform servicing of	<b>Performing servicing of chimney:</b>	0.4	1.6	2
	chimney	<ul> <li>Concept and need for the</li> </ul>			
		servicing of the chimney			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the chimney			
		<ul> <li>Servicing of the chimney</li> </ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
6.	Perform servicing of	Performing servicing of pressure	0.4	1.6	2
	pressure release valve	release valve (PRV):			
l .	(PRV)	<ul> <li>Concept and need for the</li> </ul>			
	(1 K V )	_			
	(IKV)	servicing of the pressure release			

		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the pressure			
		release valve (PRV)			
		<ul> <li>Servicing of the pressure release</li> </ul>			
		valve (PRV)			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
7.	Perform servicing of NRV	<b>Performing servicing of NRV:</b>	0.4	1.6	2
		<ul> <li>Concept and need for the</li> </ul>			
		servicing of the NRV			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the NRV			
		<ul> <li>Servicing of the NRV</li> </ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
8.	Perform servicing of steam	Performing servicing of steam	0.4	1.6	2
	trap	trap:			
		<ul> <li>Concept and need for the</li> </ul>			
		servicing of the steam trap			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the steam trap			
		<ul> <li>Servicing of the steam trap</li> </ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
9.	Perform servicing of safety	Performing servicing of safety	0.4	1.6	2
	valve	valve:			
		• Concept and need for the			
		servicing of the safety valve			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the safety valve			
		• Servicing of the safety valve			
		Related precautions/safety to be			
		taken			
10	Donforms compising of	Related records to be kept	0.4	1.6	2
10.	Perform servicing of economizer	Performing servicing of	0.4	1.6	2
	economizer	economizer:			
		Concept and need for the     conviging of the accommizer			
		servicing of the economizer Principles and procedures for			
		the servicing of the economizer			
		<ul> <li>Servicing of the economizer</li> </ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul><li>Related records to be kept</li></ul>			
11.	Perform servicing of panel	Performing servicing of panel	0.4	1.6	2
11.	board wire and cables	board wire and cables:	0.4	1.0	
	board wife and caules	<ul><li>Concept and need for the</li></ul>			
		Concept and need for the			1

		servicing of the panel board			
		wire and cables			
		<ul><li>Principles and procedures for</li></ul>			
		the servicing of the panel board			
		wire and cables			
		<ul><li>Servicing of the panel board</li></ul>			
		wire and cables			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
12.	Perform servicing of float	Performing servicing of float	0.4	1.6	2
	valve	valve:			
		<ul><li>Concept and need for the</li></ul>			
		servicing of the float valve			
		<ul> <li>Principles and procedures for</li> </ul>			
		the servicing of the float valve			
		<ul> <li>Servicing of the float valve</li> </ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul><li>Related records to be kept</li></ul>			
13.	Perform servicing of vessel	†	0.4	1.6	2
13.	descaling	Performing servicing of vessel descaling:	0.4	1.0	2
	descanng	Concept and need for the			
		servicing of the vessel descaling  Principles and procedures for			
		Timespies and procedures for			
		the servicing of the vessel			
		descaling			
		• Servicing of the vessel			
		descaling			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		Related records to be kept	0.4		
14.	Perform servicing of strainer	Performing servicing of strainer	0.4	1.6	2
	(fuel and water)	(fuel and water):			
		<ul> <li>Concept and need for the</li> </ul>			
		servicing of the strainer (fuel			
		and water)			
		<ul><li>Principles and procedures for</li></ul>			
		the servicing of the strainer			
		(fuel and water)			
		<ul><li>Servicing of the strainer (fuel</li></ul>			
		and water)			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
15.	Perform servicing of	Performing servicing of tube/coil:	0.4	1.6	2
	tube/coil	<ul> <li>Concept and need for the</li> </ul>			
		servicing of the tube/coil			
		<ul><li>Principles and procedures for</li></ul>			
		the servicing of the tube/coil			

	1
1.6	2
16	2
1.0	
1.0	2
1.6	2
1.6	2
1.6	2
1	
	1.6

		<ul><li>Servicing of the limit switch</li></ul>			
		<ul> <li>Related precautions/safety to be</li> </ul>			
		taken			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:		8	32	40
	Sub mo	dule: 3: Troubleshooting			
	<b>Description:</b> It includes the troubleshooting of boilers.	e knowledge and skills related to ca	arrying	gout	
	Objectives:				
	<ul> <li>To troubleshoot burner</li> </ul>	■ To troubleshoot steam pass			
	<ul> <li>To troubleshoot water</li> </ul>	<ul> <li>To troubleshoot fuel supply</li> </ul>			
	coil	<ul> <li>To apply hooter for trouble shoots</li> </ul>	'nσ		
	<ul> <li>To troubleshoot electric</li> </ul>	To apply hooter for trouble shoots	ing		
	circuit				
		f a task statement, related technical	knowl	edge	
		sk and time necessary for both the		_	
	practical aspects of the task.	,	J		
	4 hrs.	(Th.) + 20  hrs.  (Pr.) = 24  hrs.  (Tot.)	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Troubleshoot the burner	<b>Troubleshooting of the burner</b> :	0.7	4	4.7
		<ul> <li>Identification and uses of burner</li> </ul>			
		<ul><li>Concept and need for</li></ul>			
		troubleshooting of the burner			
		<ul><li>Principles and procedures for</li></ul>			
		troubleshooting of the burner			
		<ul> <li>Troubleshooting of the burner</li> </ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
2.	Troubleshoot water coil	<b>Troubleshooting of the water coil:</b>	0.7	4	4.7
		<ul> <li>Identification and uses of water</li> </ul>			
		coil			
		<ul> <li>Concept and need for</li> </ul>			
		troubleshooting of water coil			
		<ul><li>Principles and procedures for</li></ul>			
		troubleshooting of water coil			
		<ul><li>Troubleshooting of</li></ul>			
		<ul><li>Related safety/precautions</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
3.	Troubleshoot electric circuit	<b>Troubleshooting electric circuit:</b>	0.7	3	3.7
		<ul> <li>Identification and uses of</li> </ul>			
		electric circuit			
		<ul><li>Concept and need for</li></ul>			
		troubleshooting of electric			
		circuit			
		<ul><li>Principles and procedures for</li></ul>			
		troubleshooting of electric			
		circuit			
		<ul> <li>Troubleshooting of electric</li> </ul>			
		circuit			

		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Troubleshoot steam pass	Troubleshooting of the steam	0.7	3	3.7
''	Troubleshoot steam pass	pass:	0.7		3.7
		<ul><li>Identification and uses of steam</li></ul>			
		pass			
		<ul> <li>Concept and need for</li> </ul>			
		troubleshooting of steam pass			
		<ul> <li>Principles and procedures for</li> </ul>			
		troubleshooting of steam pass			
		<ul> <li>Troubleshooting of steam pass</li> </ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Troubleshoot fuel supply	<b>Troubleshooting of the fuel</b>	0.6	3	3.6
		supply:			
		<ul> <li>Identification and uses of fuel</li> </ul>			
		supply			
		<ul> <li>Concept and need for</li> </ul>			
		troubleshooting of fuel supply			
		<ul> <li>Principles and procedures for</li> </ul>			
		troubleshooting of fuel supply			
		<ul> <li>Troubleshooting of fuel supply</li> </ul>			
		Related safety/precautions			
	A 1 1	Related records to be kept	0.6	12	2.6
6.	Apply hooter for trouble	Applying hooter for trouble	0.6	3	3.6
	shooting	<ul><li>shooting:</li><li>Identification and uses of hooter</li></ul>			
		<ul> <li>Concept and need for applying</li> </ul>			
		hooter for trouble shooting			
		<ul> <li>Procedures for applying hooter</li> </ul>			
		for trouble shooting			
		<ul> <li>Applying hooter for trouble</li> </ul>			
		shooting			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:	•	4	20	24
	Sub module: 4: Re	pair, replacement and maintenar	псе		
	<b>Description:</b> It includes the k	nowledge and skills related to carrying	g out r	epair,	
	_	of boiler components/parts as appropr	_	• ′	
	Objectives:				
	To maintain fuel level	■ To maintain /repair oil heater			
	indicator	■ To maintain /repair burner ignition	n		
	■ To maintain air vent	transformer			
	■ To maintain /repair fuel	■ To maintain /repair hooter			
	pump	■ To maintain /repair inner jacket			
	<ul> <li>To maintain fuel filter</li> </ul>	■ To maintain /repair/replace V-bel	lt		
	■ To maintain /repair fuel	■ To maintain /repair air blower			
	tank	■ To replace gland			
	■ To maintain /repair	<ul> <li>To replace relay</li> </ul>			

	/replace nozzle To maintain /repair	<ul><li>To replace photo cell sensor</li><li>To replace pump bearing</li></ul>			
	valves	<ul><li>To replace pump bearing</li><li>To replace oil seal</li></ul>			
	To maintain /repair fuel	<ul><li>To replace oil seal</li><li>To replace bulb indicator / switch</li></ul>	100		
	pipe line	- To replace build indicator / switch	ICS		
	To maintain /repair				
	burner				
	■ To maintain /repair				
	water tank				
	To maintain fuel Steiner				
	■ To maintain /repair				
	pressure gauge				
	To maintain /repair level				
	switch/pipe/glass				
	110	f a task statement, related technical	know	ledge	
		sk and time necessary for both the		_	
	practical aspects of the task.	Ž	,		
		(Th.) + 80  hrs.  (Pr.) = 95  hrs.  (Tot.)	Ti	me (h	rs.)
SN	Tasks	Related technical knowledge	Th.	Pr.	Tot.
1.	Maintain fuel level indicator	Maintaining fuel level indicator:	0.6	3.2	3.8
		<ul> <li>Concept and function of fuel</li> </ul>			
		level indicator			
		<ul> <li>Identification of fuel level</li> </ul>			
		indicator			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance of fuel level			
		indicator			
		<ul> <li>Maintenance procedure for fuel</li> </ul>			
		level indicator			
		<ul> <li>Maintaining fuel level indicator</li> </ul>			
		<ul><li>Related safety/precautions</li></ul>			
		Related records to be kept			
2.	Maintain air vent	Maintaining air vent:	0.6	3.2	3.8
		• Concept and function of air vent			
		Identification of air vent			
		Identification of the need for			
		maintenance of air vent			
		Maintenance procedure for air			
		vent  Maintaining air yeart			
		<ul> <li>Maintaining air vent</li> <li>Related safety/precautions</li> </ul>			
		<ul><li>Related safety/precautions</li><li>Related records to be kept</li></ul>			
3.	Maintain/rapair fual numn		0.6	3.2	3.8
J.	Maintain/repair fuel pump	Maintaining/repairing fuel pump: Concept and function of fuel	0.0	2.۷	3.0
		pump			
		<ul> <li>Identification of fuel pump</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of fuel			
		pump			
		Maintenance/repairing			

	T	1 0 0 1			1
		procedure for fuel pump			
		<ul> <li>Maintaining /repairing fuel</li> </ul>			
		pump			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
4.	Maintain fuel filter	Maintaining fuel filter:	0.6	3.2	3.8
		<ul> <li>Concept and function of fuel</li> </ul>			
		filter			
		<ul> <li>Identification of fuel filter</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance of fuel filter			
		<ul> <li>Maintenance procedure for fuel</li> </ul>			
		filter			
		<ul> <li>Maintaining fuel filter</li> </ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
5.	Maintain/repair fuel tank	Maintaining/repairing fuel tank:	0.6	3.2	3.8
		<ul> <li>Concept and function of fuel</li> </ul>			
		tank			
		<ul> <li>Identification of fuel tank</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of fuel			
		tank			
		<ul> <li>Maintenance/repairing</li> </ul>			
		procedure fuel tank			
		<ul> <li>Maintaining /repairing fuel tank</li> </ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
	35 / 1	Related records to be kept	0.6	2.2	2.0
6.	Maintain/repair /replace	Maintaining/repairing /replacing	0.6	3.2	3.8
	nozzle	nozzle:			
		• Concept and function of nozzle			
		<ul> <li>Identification of nozzle</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing			
		/replacing of nozzle			
		Maintenance/repairing/replacing			
		procedure for nozzle  Maintaining /repairing/replacing			
		<ul> <li>Maintaining /repairing/replacing nozzle</li> </ul>			
		Related safety/precautions			
7.	Maintain/ranair valvas	related records to be kept	0.6	3.2	3.8
'.	Maintain/repair valves	Maintaining/repairing valves:  Concept and function of valves	0.0	3.2	3.8
		<ul><li>Concept and function of valves</li><li>Identification of valves</li></ul>			
		<ul> <li>Identification of valves</li> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of			
		valves			
		<ul><li>Maintenance/repairing</li></ul>			
		procedure for valves			
		<ul> <li>Maintaining /repairing valves</li> </ul>			
		wiamiaming /repairing varves			

	1	- Dalatad asfatzy/massaytisms	1	I	
		Related safety/precautions			
0		Related records to be kept	0.6	2.2	2.0
8.	Maintain/repair fuel pipe	Maintaining/repairing fuel pipe	0.6	3.2	3.8
	line	<u>line:</u>			
		<ul> <li>Concept and function of fuel</li> </ul>			
		pipe line			
		<ul> <li>Identification of fuel pipe line</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of fuel			
		pipe line			
		<ul> <li>Maintenance/repairing</li> </ul>			
		procedure for fuel pipe line			
		<ul> <li>Maintaining /repairing fuel pipe</li> </ul>			
		line			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
9.	Maintain/repair burner	Maintaining/repairing burner:	0.6	3.2	3.8
		<ul> <li>Concept and function of burner</li> </ul>			
		<ul><li>Identification of burner</li></ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of			
		burner			
		<ul> <li>Maintenance/repairing</li> </ul>			
		procedure for burner			
		<ul> <li>Maintaining /repairing burner</li> </ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
10.	Maintain/repair water tank	Maintaining/repairing water	0.6	3.2	3.8
	•	tank:			
		<ul> <li>Concept and function of water</li> </ul>			
		tank			
		<ul> <li>Identification of water tank</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of water			
		tank			
		<ul> <li>Maintenance/repairing</li> </ul>			
		procedure for water tank			
		<ul> <li>Maintaining /repairing water</li> </ul>			
		tank			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
11.	Maintain fuel Steiner	Maintaining fuel Steiner:	0.6	3.2	3.8
		<ul> <li>Concept and function of fuel</li> </ul>	0.0		
		Steiner Steiner			
		<ul> <li>Identification of fuel Steiner</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance of fuel Steiner			
		<ul> <li>Maintenance procedure for fuel</li> </ul>			
		Steiner			
		<ul><li>Maintaining fuel Steiner</li></ul>			
		Manitaning fuel Stelliel			

		<ul> <li>Related safety/precautions</li> </ul>			
		reduced surety, productions			
10	N/-:	Related records to be kept	0.6	3.2	2.0
12.	Maintain/repair pressure	Maintaining/repairing pressure	0.6	3.2	3.8
	gauge	gauge:			
		<ul> <li>Concept and function of</li> </ul>			
		pressure gauge			
		<ul> <li>Identification of pressure gauge</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of			
		pressure gauge			
		Maintenance/repairing			
		procedure for pressure gauge			
		<ul> <li>Maintaining /repairing pressure</li> </ul>			
		gauge			
		Related safety/precautions			
1.2	N	Related records to be kept	0.6	2.2	2.0
13.	Maintain/repair level	Maintain/repair level	0.6	3.2	3.8
	switch/pipe/glass	switch/pipe/glass:			
		• Concept and function of level			
		switch/pipe/glass			
		<ul> <li>Identification of level</li> </ul>			
		switch/pipe/glass			
		Identification of the need for			
		maintenance /repairing of level			
		switch/pipe/glass			
		Maintenance/repairing			
		procedure for level			
		switch/pipe/glass			
		Maintaining /repairing level			
		switch/pipe/glass			
		<ul> <li>Related safety/precautions</li> </ul>			
1.4	3.6	Related records to be kept	0.6	2.0	2.0
14.	Maintain/repair oil heater	Maintaining/repairing oil heater:	0.6	3.2	3.8
		<ul> <li>Concept and function of oil</li> </ul>			
		heater			
		<ul> <li>Identification of oil heater</li> </ul>			
		Identification of the need for			
		maintenance /repairing of oil			
		heater			
		Maintenance/repairing			
		procedure for oil heater			
		Maintaining /repairing oil heater     Palated as faty/grap assistings			
		<ul> <li>Related safety/precautions</li> <li>Related records to be kept</li> </ul>			
1.5	Maintain /namain harman	reduced records to be kept	0.6	2.2	2.0
15.	Maintain/repair burner	Maintaining/repairing burner	0.6	3.2	3.8
	ignition transformer	ignition transformer:			
		<ul> <li>Concept and function of burner</li> <li>ignition transformer</li> </ul>			
		ignition transformer  Identification of burner ignition			
		identification of burner ignition			
		transformer			

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Identification of the need for		
maintenance /repairing of		
burner ignition transformer		
■ Maintenance/repairing		
procedure for burner ignition		
transformer		
Maintaining /repairing burner		
ignition transformer		
<ul> <li>Related safety/precautions</li> </ul>		
<ul> <li>Related records to be kept</li> </ul>		
16. Maintain/repair hooter Maintaining/repairing hooter: 0.6	3.2	3.8
Concept and function of hooter		
<ul> <li>Identification of hooter</li> </ul>		
<ul> <li>Identification of the need for</li> </ul>		
maintenance /repairing of		
hooter		
Maintenance/repairing		
procedure for hooter		
Maintaining /repairing hooter		
Related safety/precautions		
Related records to be kept		
17. Maintain/repair inner jacket Maintaining/repairing inner 0.6	3.2	3.8
jacket:	3.2	3.0
Concept and function of inner		
jacket  Identification of inner jacket		
<ul> <li>Identification of inner jacket</li> <li>Identification of the need for</li> </ul>		
maintenance /repairing of inner		
jacket		
Maintenance/repairing		
procedure for inner jacket		
Maintaining /repairing inner		
jacket		
<ul> <li>Related safety/precautions</li> </ul>		
Related records to be kept		
18. Maintain/repair/replace V- Maintaining/repairing /replacing 0.6	3.2	3.8
belt <u>V-belt:</u>		
<ul> <li>Concept and function of V-belt</li> </ul>		
<ul> <li>Identification of V-belt</li> </ul>		
Identification of the need for		
maintenance		
/repairing/replacing of V-belt		
Maintenance/repairing		1
/replacing procedure for V-belt		
<ul> <li>Maintaining /repairing</li> </ul>		
/ 1 * *71 1.		
/replacing V-belt		
/replacing V-belt  Related safety/precautions		
<ul> <li>Related safety/precautions</li> </ul>	3.2	3.8

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		<ul> <li>Concept and function of air</li> </ul>			
		blower			
		<ul> <li>Identification of air blower</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		maintenance /repairing of air			
		blower			
		<ul> <li>Maintenance/repairing</li> </ul>			
		procedure for air blower			
		<ul><li>Maintaining /repairing air</li></ul>			
		blower			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
20.	Replace gland	Replacing gland:	0.6	3.2	3.8
		<ul> <li>Concept and function of gland</li> </ul>			
		<ul> <li>Identification of gland</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		replacing the gland			
		<ul> <li>Replacing procedure for gland</li> </ul>			
		<ul> <li>Replacing gland</li> </ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
21.	Replace relay	Replacing relay:	0.6	3.2	3.8
	T	<ul> <li>Concept and function of relay</li> </ul>			
		<ul> <li>Identification of relay</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		replacing the relay			
		<ul> <li>Replacing procedure for relay</li> </ul>			
		<ul><li>Replacing relay</li></ul>			
		<ul><li>Related safety/precautions</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
22.	Replace photo cell sensor	Replacing photo cell sensor:	0.6	3.2	3.8
	Tropingo pinoto com sonsor	<ul> <li>Concept and function of photo</li> </ul>	0.0	0.2	
		cell sensor			
		<ul><li>Identification of photo cell</li></ul>			
		sensor			
		<ul> <li>Identification of the need for</li> </ul>			
		replacing the photo cell sensor			
		<ul> <li>Replacing procedure for photo</li> </ul>			
		cell sensor			
		<ul><li>Replacing photo cell sensor</li></ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related safety/precautions</li> <li>Related records to be kept</li> </ul>			
23.	Replace pump bearing	1	0.6	3.2	3.8
ے.	Kepiace pump bearing	Replacing pump bearing: Concept and function of pump	0.0	٥.۷	٥.٥
		bearing			
		<ul><li>Identification of pump bearing</li></ul>			
		<ul> <li>Identification of pump bearing</li> <li>Identification of the need for</li> </ul>			
		replacing the pump bearing			
		Replacing procedure for pump			
		bearing			

		- D 1 ' ' '			
		<ul><li>Replacing pump bearing</li></ul>			
		<ul><li>Related safety/precautions</li></ul>			
		<ul> <li>Related records to be kept</li> </ul>			
24.	Replace oil seal	Replacing oil seal:	0.6	3.2	3.8
		<ul><li>Concept and function of oil seal</li></ul>			
		<ul> <li>Identification of oil seal</li> </ul>			
		<ul> <li>Identification of the need for</li> </ul>			
		replacing the oil seal			
		<ul> <li>Replacing procedure for oil seal</li> </ul>			
		<ul><li>Replacing oil seal</li></ul>			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
25.	Replace bulb indicator /	Replacing bulb indicator /	0.6	3.2	3.8
	switches	switches:			
		<ul><li>Concept and function of bulb</li></ul>			
		indicator / switches			
		<ul> <li>Identification of bulb indicator /</li> </ul>			
		switches			
		<ul> <li>Identification of the need for</li> </ul>			
		replacing the bulb indicator /			
		switches			
		<ul> <li>Replacing procedure for bulb</li> </ul>			
		indicator / switches			
		<ul><li>Replacing bulb indicator /</li></ul>			
		switches			
		<ul> <li>Related safety/precautions</li> </ul>			
		<ul> <li>Related records to be kept</li> </ul>			
	Sub total:	•	15	80	95
	Total:		85	305	390
		l .			

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	Module	: 5: Common module			
		s of skills and knowledge related to a	nnlied	math	
	_	HIV/AIDS, first aid, communication			
	business management applicable in		,		
	<b>Objectives:</b> After its completion to				
	To carry out simple mather	matical calculations related to the occu	apation	1	
	To be familiar with hazard	s related to this occupation	•		
	<ul> <li>To apply preventive measure</li> </ul>	ires for occupational health and safety			
	<ul> <li>To apply first aid measures</li> </ul>	5			
	<ul> <li>To apply preventive measure</li> </ul>	res for HIV/AIDS			
	To communicate with other	ers			
	<ul> <li>To apply skills of small bu</li> </ul>	siness management			
	Sub modules:				
	1. Applied math				
	2. Occupational health and sa	ıfety			
	3. First aid				
	4. HIV/AIDS				
	5. Communication	nt.			
	6. Small business managemen	ու dule: 1: Applied math			
		kills and knowledge related to n	nathen	natical	
	calculations applicable in the relate	_	iiatiicii	iaticai	
	<b>Objective:</b> After its completion th				
	1	matical calculations that must be done	for th	e	
	effective performance in the				
	Tasks: To fulfill the objective the	trainees are expected to get proficience	y on t	he	
	following tasks/skills/steps together	er with their related technical knowled	_		
		h.(4  hrs) + Pr.(16 hrs) = Tot.(20  hrs)		ime( h	
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
1.	Carry out simple addition	Addition:	0.2	0.8	1
	applicable in job situation	• Concept			
		Simple calculations			
		Application in the			
	Community simple systematics	occupation	0.2	0.0	1
2.	Carry out simple subtraction applicable in job situation	Subtraction:	0.2	0.8	1
	applicable in job situation	• Concept			
		<ul><li>Simple calculations</li><li>Application in the</li></ul>			
		occupation			
3.	Carry out simple multiplication	Multiplication	0.2	0.8	1
J.	applicable in job situation	• Concept	0.2	0.0	1
	Tr-Tenere in Jos Situation	Simple calculations			
		Application in the			
		occupation			
4.	Carry out simple division	Division:	0.2	0.8	1
	applicable in job situation	• Concept			
		Simple calculations			

		Application in the occupation			
5.	Carry out measurements	Measurement:	0.2	0.8	1
		Concept			
		Application in the			
		occupation			
6.	Convert units of measurement	<b>Units of measurement:</b>	0.2	0.8	1
		Concept			
		Units of measurement			
		Unit conversion			
		application			
7.	Convert units of measuring	Units of measuring	0.2	0.8	1
	temperature	temperature:			
		• Concept			
		Units of temperature			
		measurement			
		Unit conversion			
		Application			
8.	Calculate area	Area:	0.2	0.8	1
		• Concept			
		• Formula			
		Calculation			
		Application			
9.	Calculate volume	Volume:	0.2	0.8	1
•		• Concept	0.2		1
		• Formula			
		Calculation			
		Application			
10.	Calculate weight	Weight:	0.2	0.8	1
10.	Calculate weight	• Concept	0.2	0.0	1
		• Formula			
		Calculation			
11	Coloulata paraantaga	Application     Department	0.2	0.8	1
11.	Calculate percentage	Percentage:	0.2	0.8	1
		• Concept			
		• Formula			
		• Calculation			
10		Application		0.0	-
12.	Calculate ratio and proportions	Ratio and proportions:	0.2	0.8	1
		• Concept			
		Formula			
		Calculation			
		Application			
13.	Apply Pythagoras formula	Pythagoras formula:	0.2	0.8	1
		Concept			
		Formula			

		Application			
14.	Apply unitary method	Unitary method:	0.2	0.8	1
14.	Appry unitary method	• Concept	0.2	0.8	1
		Concept     Calculation			
1.5	Calculate along the interest	• Application	0.2	0.0	1
15.	Calculate simple interest	Simple interest:	0.2	0.8	1
		• Concept			
		• Formula			
		• Calculation			
4.6		Application		0.0	1
16.	Calculate unit cost	<u>Unit cost:</u>	0.2	0.8	1
		• Concept			
		Formula			
		Calculation			
		Application			
17.	Calculate per unit income	Per unit income:	0.2	0.8	1
		Concept			
		Formula			
		Calculation			
		Application			
18.	Calculate profit and loss	Profit and loss:	0.2	0.8	1
		• Concept			
		Formula			
		Calculation			
		Application			
19.	Perform billing	Billing:	0.2	0.8	1
		Concept			
		Calculation			
		Bill format			
		Procedure			
		Application			
20.	Prepare simple balance sheet	Balance sheet:	0.2	0.8	1
_0.	r pro salamos sinost	• Concept	J.Z		
		• Format			
		Procedure			
		Application			
	Total:	Application	4	16	20
		□ □ Dccupational health and safety		10	20
		and knowledge related to occupation	al heal	th and	
	safety applicable in the related occ	<u> </u>			
	Objectives: After its completion the	he trainees will be able:			
	To be familiar with hazards rel				
		for occupational health and safety			
	11 7 1	trainees are expected to get proficien	cy on the	he	
		er with their related technical knowle	-		
		Th.(2  hrs) + Pr.(8 hrs) = Tot.(10  hrs)		ime( h	rs)
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
		pation		•	

1.	Be familiar with accident hazards	<ul> <li>Accident hazards:</li> <li>Concept</li> <li>Causes</li> <li>Procedures for managing this hazard</li> </ul>	0.2	0.8	1
2.	Be familiar with physical hazards	<ul> <li>Physical hazards:</li> <li>Concept</li> <li>Causes</li> <li>Procedures for managing this hazard</li> </ul>	0.2	0.8	1
3.	Be familiar with chemical hazards	<ul> <li>Chemical hazards:</li> <li>Concept</li> <li>Causes</li> <li>Procedures for managing this hazard</li> </ul>	0.2	0.8	1
4.	Be familiar with biological hazards	<ul> <li>Biological hazards:</li> <li>Concept</li> <li>Causes</li> <li>Procedures for managing this hazard</li> </ul>	0.2	0.8	1
5.	Be familiar with ergonomic/psychological / organizational factors:	Ergonomic /psychological / organizational factors:  Concept of: Ergonomic factors Psychological factors organizational factors Procedures for managing hazards caused by these factors	0.2	0.8	1
	Sub total:		1	4	4
Apply p.	ware safety wares	health and safety  Safety wares:  Identification  Needs  Wearing procedures	0.2	0.5	0.7
2.	Inspect workplace before working	<ul> <li>Workplace inspection:</li> <li>Concept</li> <li>Principle and procedures</li> <li>Records keeping</li> </ul>	0.2	0.5	0.7
3.	Inspect tools/materials/equipment before use	Inspection of tools/materials/equipment:  Concept and identification Principle and procedures Records keeping	0.1	0.5	0.6
4.	Be prevented from accident hazards	Prevention of accident hazards:	0.1	0.5	0.6

			Γ ~	1	1	1
			• Concept			
			Being prevented from			
			accident hazards			
			Records keeping			
5.	Be prevented from physical		Prevention of physical	0.1	0.5	0.6
	hazards		hazards:			
			Concept			
			Being prevented from			
			physical hazards			
			Records keeping			
6.	Be prevented from chemical		Prevention of chemical	0.1	0.5	0.6
	hazards		hazards:			
			• Concept			
			Being prevented from			
			chemical hazards			
			Records keeping			
7.	Be prevented from biological		Prevention of biological	0.1	0.5	0.6
/•	hazards		hazards:	0.1	0.5	0.0
	nazarus		• Concept			
			1			
			Being prevented from  biological bazards			
			biological hazards			
	D 4.16		Records keeping	0.1	0.5	0.6
8.	Be prevented from		Prevention of	0.1	0.5	0.6
	ergonomic/psychological /		ergonomic/psychological /			
	organizational factors that create		organizational factors that			
	problems/hazards.		<u>create problems/hazards:</u>			
			• Concept			
			Being prevented from			
			ergonomic/psychological /			
			organizational factors that			
			create problems/hazards			
			Records keeping			
	Sub total:			1	4	5
	Total:			2	8	10
		_	odule: 3: First aid			
	<b>Description:</b> It consists of skill		<u> </u>	aid mea	asures	
	applicable in the related occupation					
	<b>Objective:</b> After its completion th	e 1	rainees will be able:			
	• To apply first aid measures					
	<b>Tasks</b> : To fulfill the objective the	tra	ninees are expected to get proficien	cy on th	ne	
	following tasks/skills/steps together	er	with their related technical knowle	dge:		
		T	Th.(1  hrs) + Pr.(4 hrs) = Tot.(5  hrs)	Ti	ime( hı	s)
SN	Tasks or skills/ steps		Related technical knowledge	Th.	Pr.	Tot.
1.	Carryout simple dressings		Carryout simple dressings:	0.10	0.40	0.5
			• Concept			
			• Needs			
			Procedures			
			<ul><li>Precautions</li></ul>			
	1	i	- 1100000000	1	i	i

		Recording			
2.	Apply simple bandages	Apply simple bandages:	0.10	0.40	0.5
		• Concept			
		• Needs			
		<ul> <li>Procedures</li> </ul>			
		<ul> <li>Precautions</li> </ul>			
		<ul> <li>Recording</li> </ul>			
3.	Apply first aid for simple	Apply first aid for simple	0.10	0.40	0.5
	wounds	wounds:			
		• Concept			
		• Needs			
		• Procedures			
		• Precautions			
		Recording			
4.	Apply first aid for heat /chemical	Apply first aid for heat	0.10	0.40	0.5
	burns	/chemical burns:			
		• Concept			
		• Needs			
		• Procedures			
		• Precautions			
		Recording			
5.	Apply first aid for injuries/cuts	Apply first aid for	0.10	0.40	0.5
		<u>injuries/cuts:</u>			
		• Concept			
		• Needs			
		• Procedures			
		• Precautions			
		Recording			
6.	Apply first aid for fracture	Apply first aid for fracture:	0.10	0.40	0.5
		• Concept			
		• Needs			
		• Procedures			
		• Precautions			
		Recording	0.10	0.40	0.5
7.	Apply first aid for simple	Apply first aid for simple	0.10	0.40	0.5
	bleeding	bleeding:			
		• Concept			
		• Needs			
		• Procedures			
		• Precautions			
0	A 1 6" 4 116 1 116	• Recording	0.05	0.20	0.27
8.	Apply first aid for insect bites	Apply first aid for insect bites:	0.05	0.20	0.25
		• Concept			
		• Needs			
		• Procedures			
		• Precautions			
		Recording			

9.	Apply first aid for animal bites		Apply first aid for animal	0.05	0.20	0.25
			bites:			
			• Concept			
			• Needs			
			• Procedures			
			• Precautions			
			Recording			
10.	Apply first aid for frost bite		Apply first aid for frost bite:	0.05	0.20	0.25
			• Concept			
			• Needs			
			Procedures			
			<ul> <li>Precautions</li> </ul>			
			Recording			
11.	Apply first aid for simple		Apply first aid for simple	0.05	0.20	0.25
	poisoning		poisoning:			
			• Concept			
			• Needs			
			Procedures			
			<ul> <li>Precautions</li> </ul>			
			Recording			
12.	Apply first aid for electrical		Apply first aid for electrical	0.05	0.20	0.25
	shock		shock:			
			• Concept			
			• Needs			
			Procedures			
			Precautions			
			Recording			
13.	Apply first aid for choking/		Apply first aid for choking/	0.05	0.20	0.25
	drowning		drowning:			
			• Concept			
			• Needs			
			Procedures			
			Precautions			
			Recording			
	Total:		rteestumg	1	4	5
		။ ဂဂ	dule: 4: HIV/AIDS	1 -	<u> </u>	
	<b>Description:</b> It consists of skills a					1
	measures to be followed for the pr					
	management.					
	<b>Objectives:</b> After its completion t	he	trainees will be able:			
	• To state the concept of HIV/A					
	<ul> <li>To apply safety measures for p</li> </ul>					
	<b>Tasks</b> : To fulfill the objective the			1		
	proficiency on the following tasks.					
	related technical knowledge:		The second with mon			
	mo mage.	Т	h.(1  hrs) + Pr.(4 hrs) = Tot.(5  hrs)	Ti	me( hr	$r_{\rm S}$ )
SN	Tasks or skills/ steps		Related technical knowledge	Th.	Pr.	Tot.
1.	State the concept of		State the concept of	0.5	2	2.5
		1			<u> </u>	

IIIV/AIDC	IIIV/AIDC-			
HIV/AIDS	HIV/AIDS:			
1. Define HIV	HIV:			
2. Enlist modes of transmission	Definition of HIV:			
of HIV	Modes of transmission of			
3. Enlist signs and symptoms of	HIV			
HIV infected person	Signs and symptoms of HIV			
4. Enlist stages of HIV	infected person			
5. Define AIDS	Stages of HIV			
6. Enlist signs and symptoms of AIDS	AIDS:			
7. Enlist current status of global	Definition of AIDS			
HIV/AIDS	Signs and symptoms of			
8. Enlist difference between	AIDS			
HIV/AIDS	Current status of global			
THV/MD3	HIV/AIDS			
	Difference between HIV and			
	AIDS			
<b>2.</b> Apply safety measures for	Apply safety measures for	0.5	2	2.5
prevention of <b>HIV/AIDS</b> :	prevention of HIV/AIDS:			
1. Keep touch with single	Keeping touch with single			
partner for sexual intercourse	partner for sexual intercourse			
2. Ensure safe intercourse	Ensuring safe intercourse			
3. Use condom carefully and	Using condom carefully and			
consistently during each act of	consistently during each act			
sexual intercourse incase of	of sexual intercourse incase			
other than single sex partner	of other than single sex			
4. Keep away from sharing	partner			
syringes, needles and other	Keeping away from sharing			
skin piercing instrument with	syringes, needles and other			
HIV infected people	skin piercing instrument with			
5. Keep away from sharing toothbrushes, blade razors or	HIV infected people			
other instruments that could	Keeping away from sharing			
become contaminated from	toothbrushes, blade razors or			
blood	other instruments that could			
6. Keep away from handling	become contaminated from			
clothes or cloths that are	blood			
visibly contaminated with	Keeping away from handling			
blood	clothes or cloths that are			
7. Follow positive health	visibly contaminated with			
behavior	blood			
8. Get blood be tested to ensure	Positive health behavior			
HIV negative/positive	Getting blood be tested to			
0 /1	ensure HIV negative/positive			
Total:	8.07	1	4	5
	lle: 5 : Communication			
	ls and knowledge related to communic	ation	in the	
	ists of its steps, related technical know			
hour distribution.	1 /	9-		
<b>Objectives</b> : After its completion the	he trainees will be able:			

	To handle fax		communicate with financial in	stitute	es	
	To handle mail		To link with media			
	To write letters		<ul> <li>To disseminate information</li> </ul>			
	• To write memos / tips /		Write job application			
	notes / notice		Prepare Resume.			
	To perform internal		• Communicate with senior.			
	communication		• Communicate with juniors.			
	To perform external		Deal with customers			
	communication		• Request / purchase tool, suppl	ies		
	To perform oral		materials and equipment.	105,		
	communication		• Fill up leave requisition form.			
	To perform written		Thi up leave requisition form.			
	communication					
		tra	inees are expected to get proficiency	v on th	ne.	
			with their related technical knowledge			
	<del>-</del>		.(2  hrs) + Pr.(8 hrs) = Tot.(10  hrs)		me( hr	·s )
SN	Tasks or skills/ steps	_ 11	Related technical knowledge	Th.	Pr.	Tot.
1.	Handle telephone calls		Handling telephone calls:	0.1	0.4	0.5
			• Concept, need, and			
			importance			
			Operating principles and			
			procedures			
			Care and maintenance			
			<ul> <li>Safety precautions to be</li> </ul>			
			taken			
			Keeping activity records			
2.	Handle fax		Handling fax:	0.1	0.4	0.5
4.	Trandic tax		• Concept, need, and	0.1	0.4	0.5
			importance			
			Operating principles and			
			<ul><li>procedures</li><li>Care and maintenance</li></ul>			
			Safety precautions to be taken			
2	Handla mail		Keeping activity records	0.1	0.4	0.5
3.	Handle mail		Handling mail:	0.1	0.4	0.5
			• Concept, need, and			
			importance			
			Operating principles and			
			procedures			
			Care and maintenance			
			Safety precautions to be			
			taken			
			Keeping activity records		_	
4.	Write letters		Writing letters:	0.1	0.4	0.5
			• Concept, need, and			
			importance			
			Types of letter			
L	1	<u> </u>	1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		1	1

		Component parts of each			
		• Component parts of each type of letter			
		• Format of each type of letter			
		Writing letters			
		Precautions to be taken			
		Keeping activity records			
5.	Write memos / tips / notes /	Writing memos / tips / notes /	0.1	0.4	0.5
	notice	notice :			
		Concept, need, and			
		importance			
		• Component parts of memos /			
		tips / notes / notice			
		• Format of memos / tips /			
		notes / notice			
		• Writing memos / tips / notes / notice			
		Precautions to be taken			
		Keeping activity records			
6.	Prepare simple report	Preparing simple report:	0.1	0.4	0.5
	6. Prepare simple report	Concept, need, and			
		importance			
		Component parts of a report			
		Format of a report			
		Writing a report			
		Precautions to be taken			
		Keeping activity records			
7.	Prepare simple proposal	Preparing simple proposal:	0.1	0.4	0.5
		• Concept, need, and			
		importance			
		Component parts of a  proposal			
		<ul><li>proposal</li><li>Format of a proposal</li></ul>			
		Writing a proposal			
		Precautions to be taken			
		Keeping activity records			
8.	Perform internal/ external	Performing internal/ external	0.1	0.4	0.5
	communication	communication:			
		• Concept, need, and			
		importance			
		Principles, procedures, and			
		application			
		Performing internal/ external			
		communication			
		Precautions to be taken			
0	Doufours having auto1/	Keeping activity records  Parforming having at all yearting.	0.1	0.4	0.5
9.	Perform horizontal/vertical communication	Performing horizontal/vertical communication:	0.1	0.4	0.5
	Communication	• Concept, need, and			
		Concept, need, and		1	1

			1	1	1
		importance			
		<ul> <li>Principles, procedures, and</li> </ul>			
		application			
		Performing			
		horizontal/vertical			
		communication			
		<ul> <li>Precautions to be taken</li> </ul>			
		<ul> <li>Keeping activity records</li> </ul>			
10.	Perform oral/ written	Performing oral/ written	0.1	0.4	0.5
	communication	communication:			
		<ul> <li>Concept, need, and</li> </ul>			
		importance			
		Principles, procedures, and			
		application			
		Performing oral/ written			
		communication			
		Precautions to be taken			
		Keeping activity records			
11.	Communicate with financial	Communicating with financial	0.1	0.4	0.5
	institutes	institutes:			
		• Concept, need, and			
		importance			
		Principles, procedures, and			
		application			
		Communicating with			
		financial institutes			
		<ul> <li>Precautions to be taken</li> </ul>			
		Keeping activity records			
12.	Link with media	Linking with media:	0.1	0.4	0.5
		Concept, need, and			
		importance			
		Principles, procedures, and			
		application			
		Linking with media			
		Precautions to be taken			
		Keeping activity records			
13.	Disseminate information	Disseminating information:	0.1	0.4	0.5
		• Concept, need, and			
		importance			
		Principles, procedures, and			
		application			
		<ul> <li>Disseminating information</li> </ul>			
		Precautions to be taken			
		Keeping activity records			
14.	Write job application	Writing job application:	0.1	0.4	0.5
A 10	The job application	• Concept, need, and	0.1	0.4	3.3
		importance			
		Component parts of job			
<u> </u>		t Component parts of jou	1	1	

		omplication		1	
		application			
		Format of job application			
		Writing job applications			
		Precautions to be taken			
1.5		Keeping activity records	0.1	0.4	0.5
15.	Prepare resume	Preparing resume:	0.1	0.4	0.5
		• Concept, need, and			
		importance			
		<ul><li>Component parts of a resume</li><li>Format of a resume</li></ul>			
		<ul><li>Writing resume</li><li>Precautions to be taken</li></ul>			
16	Communicate with senior.	Keeping activity records	0.1	0.4	0.5
16.	Communicate with senior.	Communicating with senior:	0.1	0.4	0.5
		• Concept, need, and			
		importance			
		• Principles, procedures, and application			
		<ul><li>Communicating with senior</li></ul>			
		Precautions to be taken			
17.	Communicate with juniors.	<ul> <li>Keeping activity records</li> <li>Communicating with juniors:</li> </ul>	0.1	0.4	0.5
17.	Communicate with jumors.	• Concept, need, and	0.1	0.4	0.5
		importance			
		<ul> <li>Principles, procedures, and</li> </ul>			
		application			
		Precautions to be taken			
		Keeping activity records			
18.	Deal with customers/stake	Dealing with customers/stake	0.1	0.4	0.5
10.	holders	holders:	0.1		0.0
		• Concept, need, and			
		importance			
		Principles, procedures, and			
		application			
		Communicating with juniors			
		Precautions to be taken			
		Keeping activity records			
19.	Request / purchase tool,	Requesting / purchasing tool,	0.1	0.4	0.5
	supplies, materials and	supplies, materials and			
	equipment.	equipment:			
		Concept, need, and			
		importance			
		Principles, procedures, and			
		application			
		• Requesting / purchasing tool,			
		supplies, materials and			
		equipment			
		<ul> <li>Precautions to be taken</li> </ul>			

		Keeping activity records			
20.	Fill up leave requisition form	Filling up leave requisition	0.1	0.4	0.5
	up	form:			
		• Concept, need, and			
		importance			
		<ul> <li>Principles, procedures, and</li> </ul>			
		application			
		<ul><li>Filling up leave requisition</li></ul>			
		form			
		<ul> <li>Precautions to be taken</li> </ul>			
		<ul> <li>Keeping activity records</li> </ul>			
		Total:	2	8	10
	Sub module: 6 :	Small enterprise development	4	O	10
		kills and knowledge related to sma	ll ente	rnrise	
		pation. Each task consists of its s			
	technical knowledge and hour distr		teps, i	ciaica	
	Objectives: After its completion t				
	• To be familiar with entreprener				
	<ul> <li>To prepare a business plan</li> </ul>	arsinp acveropment			
		trainees are expected to get proficience	rv on th	16	
		er with their related technical knowled		ic	
		a.(4  hrs) + Pr.(16  hrs) = Tot.(20  hrs)		me( hr	·s )
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
	Entrepreneurship	Entrepreneurship			
	development:	development:			
1.	Be familiar with business /	Business / entrepreneurship:	0.1	0.4	0.5
	entrepreneurship	<ul> <li>Concept, definitions, need,</li> </ul>			
		and importance			
		• Precautions to be taken			
		Keeping activity records			
2.	Develop qualities of a successful	Qualities of a successful	0.1	0.4	0.5
	entrepreneur	entrepreneur:			
	1	<ul> <li>Concept and needs</li> </ul>			
		<ul> <li>Qualities of a successful</li> </ul>			
		entrepreneur			
		Keeping activity records			
3.	Follow professional ethics	Professional ethics:	0.1	0.4	0.5
••	Tonow proressional cames	• Concept, need, and	0.1	0	0.0
		importance			
		<ul> <li>Professional ethics</li> </ul>			
		<ul><li>Interpretation</li></ul>			
		<ul><li>Precautions to be taken</li></ul>			
4	Analyza pravailing miles /	Keeping activity records  Proveiling rules / regulations/	0.1	0.4	0.5
4.	Analyze prevailing rules /	Prevailing rules / regulations/ laws /acts related to the	0.1	0.4	0.3
	regulations/ laws /acts related to				
	the profession	profession:			
		• Concept, need, and			
		importance			

5.	Develop skills of good governance	<ul> <li>Prevailing rules / regulations/ laws /acts related to the profession</li> <li>Interpretation</li> <li>Precautions to be taken</li> <li>Keeping activity records</li> <li>Good governance:         <ul> <li>Concept, need, and importance</li> <li>Principles and procedures of good governance</li> <li>Precautions to be taken</li> <li>Keeping activity re</li> </ul> </li> </ul>	0.1	0.4	0.5
6.	Be familiar with entrepreneurship development/ factors affecting the growth of entrepreneurship	Entrepreneurship development/ factors affecting the growth of entrepreneurship:  • Concept, need, and importance • Entrepreneurship development • Factors affecting the growth of entrepreneurship • Precautions to be taken • Keeping records	0.1	0.4	0.5
7.	Develop an entrepreneurship competency development [ECD] program	Entrepreneurship competency development [ECD] program:  Concept, need, and importance Entrepreneurship competency development [ECD] ECD program development Precautions to be taken Keeping records	0.1	0.4	0.5
8.	Be familiar with identification / selection/appraising/gaining instructional a support of a project  Be familiar with identification of a project  Be familiar with selection of a project  Be familiar with appraising of a project  Be familiar with gaining instructional a support of a project	Identification / selection/appraising/gaining instructional a support of a project:	0.1	0.4	0.5

9.	Be familiar with the preparation	Be familiar with the	0.1	0.4	0.5
	of a comprehensive business	preparation of a			
	plan for starting / acquiring	comprehensive business plan			
	/running a business	for starting / acquiring			
		/running a business:			
		• Preparation of a			
		comprehensive business plan			
		for starting a business			
		Preparation of a			
		comprehensive business plan			
		for acquiring a business			
		Preparation of a			
		comprehensive business plan			
		for running a business			
		Precautions to be taken			
		Keeping records			
10.	Be familiar with marketing of	Be familiar with marketing of	0.1	0.4	0.5
	products	products:			
		• concept of product, price,			
		place, promotion			
		<ul> <li>marketing of products</li> </ul>			
		Precautions to be taken			
		Keeping records			
		Sub total:	1	4	5
	Business plan:	Business plan:			
11.	Business plan: Collect related information / data	Business plan: Collecting related information	0.4	1.6	2
11.		Business plan: Collecting related information / data:	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related	0.4	1.6	2
11.		Business plan:  Collecting related information /data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related information / data	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related information / data  Collecting related information / data	0.4	1.6	2
11.		Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related information / data  Collecting related information / data  Precautions to be taken	0.4	1.6	2
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related information / data  Collecting related information / data  Collecting related information / data  Precautions to be taken  Keeping records			
11.		Business plan:  Collecting related information /data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related information / data Collecting related information / data Precautions to be taken Keeping records Preparing production plan:	0.4	1.6	2
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related information / data Collecting related information / data Precautions to be taken Keeping records  Preparing production plan: Concept, need, and			
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related information / data  Collecting related information / data  Precautions to be taken  Keeping records  Preparing production plan:  Concept, need, and importance			
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related information / data Collecting related information / data Precautions to be taken Keeping records Preparing production plan: Concept, need, and importance Component parts			
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information  Difference between data and information  Principles and procedures for collecting related information / data  Collecting related information / data  Collecting related information / data  Precautions to be taken  Keeping records  Preparing production plan:  Concept, need, and importance  Component parts  Format			
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related information / data Collecting related information / data Precautions to be taken Keeping records Preparing production plan: Concept, need, and importance Component parts Format Principles and procedures			
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related information / data Collecting related information / data Precautions to be taken Keeping records  Preparing production plan: Concept, need, and importance Component parts Format Principles and procedures Precautions to be taken			
	Collect related information / data	Business plan:  Collecting related information / data:  Concept, need, and importance of data and information Difference between data and information Principles and procedures for collecting related information / data Collecting related information / data Collecting related information / data Precautions to be taken Keeping records Preparing production plan: Concept, need, and importance Component parts Format Principles and procedures			

14.	Prepare financial plan	<ul> <li>Concept, need, and importance</li> <li>Component parts</li> <li>Format</li> <li>Principles and procedures</li> <li>Precautions to be taken</li> <li>Keeping records</li> </ul> Preparing financial plan: <ul> <li>Concept, need, and importance</li> <li>Component parts</li> <li>Format</li> <li>Principles and procedures</li> <li>Precautions to be taken</li> <li>Keeping records</li> </ul>	0.4	1.6	2
15.	Prepare marketing plan	Preparing marketing plan:  Concept, need, and importance Component parts Format Principles and procedures Precautions to be taken Keeping records	0.4	1.6	2
16.	Prepare a business plan	Preparing a business plan:  Concept, need, and importance Component parts Format Principles and procedures Precautions to be taken Keeping records	0.6	2.4	3
17.	Appraise business plan	Appraising business plan:  Concept, need, and importance Principles and procedures Precautions to be taken Keeping records Sub total:	3 4	1.6	15
		Common module total:	14	16 56	70
		All total:	99	361	460

Tools, materials and equipment								
■ Wrench set	Screw driver							
	File							
Tillell Rey Sec								
• Venire caliper	Taco meter							
• Flat brush	Seal							
Round brush	Water test kit							
• Gauge meter	Multimeter							
<ul> <li>Anometer</li> </ul>	Hacksaw frame							
<ul><li>Pliers</li></ul>	■ Vice							
■ Pin punch	■ Grease gun							
■ Die set	Lather apron							
■ Thermometer	■ Pipe/slide wrench							
<ul><li>Safety goggles</li></ul>	■ Chisel							
<ul><li>Line/phase tester</li></ul>	■ Drill machine							
F	Reading materials							
<ul> <li>Instructor selected</li> </ul>	<ul> <li>Instructor prepared books,</li> </ul>							
textbooks/ reference	handouts, notes and manuals							
books / manuals/ journals								
and articles available in								
the market								
	Facilities							
Classroom (Spacious)	■ Hostel(optional)							
<ul> <li>Well equipped workshop</li> </ul>	OHP Multimedia projector							
■ Boilers	Computer/Lap top							
<ul><li>Principal' room</li></ul>	Photocopier/Scanner/Printer							
Admin/Account room	■ Internet facilities							
<ul> <li>Reception room</li> </ul>	■ Telephone							
■ Trainers room	■ Fax							
Still and Video Camera	Well equipped library							
A/V room	Water supply  Water supply							
■ Vehicle(optional)	Power supply  Power supply							
<ul><li>Canteen(optional)</li></ul>								

## Modules, sub modules, tasks and time distribution

	Trioduces, sub modules, tasks and time distr	120			
	Module: 1: Boiler introduction				
	Sub module: 1: Boiler fundamentals, operation and safety				
	Sub module: 2: Boiler maintenance, inspection, testing &				
	efficiency				
	Sub module: 3: Enforcing safety measures				
	Sub module: 4: Tools, materials & equipments				
	Sub module: 5: Components/devices/accessories				
	Sub module: 1: Boiler fundamentals, operation		Th.	Pr.	Tot.
	and safety				
1.	Be familiar with boiler fundamentals		1	1	2
2.	Be familiar with fundamentals of combustion and heat		1	1	2
	transfer				
3.	Be familiar with burner operation and control		1	1	2
4.	Be familiar with boiler operation and testing		1	1	2
5.	Be familiar with boiler room safety		1	1	2
6.	Be familiar with cause and effect case study		1	1	2
	Sub total:		6	6	12
	Sub module: 2: Boiler maintenance, inspection,				
	testing & efficiency				
1.	Be familiar with construction and design standards		1	1	2
2.	Be familiar with controls/safety devices for automatically		1	1	2
۷٠	fired boilers		1	1	2
3.	Be familiar with inspection/maintenance of		1	1	2
] 3.	commercial/industrial boilers		1	1	2
4.	Be familiar with boiler/burner efficiency		1	1	2
5.	Be familiar with trouble shooting		1	1	2
<i>J</i> .	Sub total:		5	5	10
			3	3	10
1	Sub module: 2: Enforcing safety measures		0.2	0.4	0.6
1.	Enforce personal safety		0.2	0.4	0.6
2.	Enforce fuel valve for safety to fuel pump		0.2	0.3	0.5
3.	Enforce setting point of fuel		0.2	0.3	0.5
4.	Enforce point water level		0.2	0.3	0.5
5.	Enforce sensor functioning Ensure boiler room cleanliness		0.2	0.3	0.5
6.			0.2	0.3	0.5
7.	Enforce buzzer (Hotter) functioning		0.2	0.3	0.5
8.	Enforce blower setting		0.1	0.3	0.4
9.	Enforce to the pipe line checking (fuel/water)		0.1	0.3	0.4
10.	Enforce safety valve conditioning		0.1	0.3	0.4
11.	Enforce trap valve functioning		0.1	0.3	0.4
12.	Minimize pollution		0.1	0.3	0.4
13.	Enforce setting temperature		0.1	0.3	0.4
	Sub total:	-	2	4	6
	Sub module: 3: Tools, materials & equipments	_			
1.	Handle wrench set		0.2	0.1	0.3
2.	Handle pliers		0.2	0.1	0.3
3.	Handle line/phase tester		0.2	0.1	0.3

4.	Handle multimeter		0.2	0.1	0.3
5.	Handle pipe/slide wrench		0.2	0.1	0.3
6.	Handle hammer		0.1	0.1	0.2
7.	Handle Allen key		0.1	0.1	0.2
8.	Handle pin punch		0.1	0.1	0.2
9.	Handle screw driver		0.1	0.1	0.2
10.	Handle hacksaw frame		0.1	0.1	0.2
11.	Handle chisel		0.1	0.1	0.2
				0.1	0.2
12.	Handle sprit level Handle venire caliper		0.1	0.1	
13.	Handle die set		0.1	_	0.3
14.	Handle file		0.1	0.2	0.3
15.			0.1	0.2	
16.	Handle vice		0.1	0.2	0.3
17.	Handle drill machine		0.1	0.2	0.3
18.	Handle nozzle brush		0.1	0.2	0.3
19.	Handle flat brush and round brush		0.1	0.2	0.3
20.	Handle thermometer	$\vdash \vdash$	0.1	0.2	0.3
21.	Handle taco meter	$\vdash \vdash$	0.1	0.2	0.3
22.	Handle grease gun	$\vdash \vdash$	0.1	0.2	0.3
23.	Handle oil-can		0.1	0.2	0.3
24.	Handle holder		0.1	0.2	0.3
25.	Handle welding machine		0.1	0.2	0.3
26.	Handle safety goggles		0.1	0.2	0.3
27.	Handle hand seal		0.1	0.2	0.3
28.	Handle lather apron		0.1	0.2	0.3
29.	Handle chipping hammer		0.1	0.2	0.3
30.	Handle PH meter		0.1	0.2	0.3
31.	Handle gauge meter		0.1	0.2	0.3
32.	Handle arc welding rod		0.1	0.2	0.3
33.	Handle water test kit		0.1	0.2	0.3
34.	Handle anometer		0.1	0.2	0.3
35.	Handle fuel ( kerosene/furnace oil/husu)		0.1	0.2	0.3
36.	Handle pressure gauge		0.1	0.2	0.3
	Sub total:		4	6	10
	Sub module: 4: Components/devices/accessories				
1.	Identify burner		0.1	0.2	0.3
2.	Identify decider plate		0.1	0.2	0.3
3.	Identify y-Steiner		0.1	0.2	0.3
4.	Identify non-return valve		0.1	0.2	0.3
5.	Identify safety valve		0.1	0.2	0.3
6.	Identify level switch/pipe/glass		0.1	0.2	0.3
7.	Identify nozzle		0.1	0.2	0.3
8.	Identify fuel pump		0.1	0.2	0.3
9.	Identify ball valve		0.1	0.2	0.3
10.	Identify gate valve		0.1	0.2	0.3
11.	Identify water pump		0.1	0.2	0.3
12.	Identify firing looking glass		0.1	0.2	0.3
13.	Identify release valve		0.1	0.2	0.3

1.4	Identify soil		0.1	0.2	0.2
14.	Identify coil		0.1	0.2	0.3
15.	Identify safety head		0.1	0.2	0.3
16.	Identify electronic rod		0.1	0.2	0.3
17.	Identify pressure switch		0.1	0.2	0.3
18.	Identify butterfly valve		0.1	0.2	0.3
19.	Identify inner jacket		0.1	0.2	0.3
20.	Identify economizer		0.1	0.2	0.3
21.	Identify fuel filter/hose pipes		0.1	0.1	0.2
22.	Identify cap-robber		0.1	0.1	0.2
23.	Identify cupper pipe		0.1	0.1	0.2
24.	Identify flinch		0.1	0.1	0.2
25.	Identify air blower		0.1	0.1	0.2
26.	Identify external (over) head		0.1	0.1	0.2
27.	Identify external body		0.1	0.1	0.2
28.	Identify flexible pipes		0.1	0.1	0.2
29.	Identify pressure gauge		0.1	0.1	0.2
30.	Identify photocell/sensors	+	0.1	0.1	0.2
31.	Identify heat proof cement (concrete)	+	0.1	0.1	0.2
32.	Identify foundation bolts		0.1	0.1	0.2
33.	Identify gaskets (heat proof)		0.1	0.1	0.2
34.	Identify V-belt		0.1	0.1	0.2
35.	Identify water tank/ fuel tank		0.1	0.1	0.2
36.	Identify water tank rule tank  Identify hooter		0.1	0.1	0.2
37.	Identify hooter  Identify burner ignition transformer		0.1	0.1	0.2
38.			0.1	0.1	0.2
	Identify metal pipes/ water tank		_	0.1	0.2
39.	Identify heat proof gland		0.1	+	
40.	Identify oil heater		0.1	0.1	0.2
	Sub total:		4	6	10
	Module: 2: Controlling / maintaining /				
	inspecting systems				
	Sub module: 1: Fuel system				
	Sub module: 2: Water system				
	Sub module: 3: Inspect operating system				
	Sub module: 1: Fuel system				
1.	Read/Interpret fuel system		0.3	1.4	1.7
2.	Control/maintain fuel level		0.3	1.4	1.7
3.	Control/maintain fuel temperature		0.3	1.3	1.6
4.	Control/maintain fuel quality		0.3	1.3	1.6
5.	Control/maintain fuel pressure		0.4	1.3	1.7
6.	Control/maintain fuel quantity		0.4	1.3	1.7
	Sub total:	+	2	8	10
	Sub module: 2: Water system		1-	<u> </u>	1
1.	Read/Interpret water system		0.3	1.0	1.3
2.	Control/maintain water level	+	0.3	1.0	1.3
3.		+	0.3	1.0	1.3
	Control/maintain water temperature			_	
4.	Control hardness	$\Box$	0.3	1.0	1.3
5.	Control/maintain water PH	$\perp$	0.2	1.0	1.2
6.	Control/maintain TDS		0.2	1.0	1.2

7.	Control/maintain water pressure		0.2	1.0	1.2
8.	Maintain water quantity		0.2	1.0	1.2
	Sub total:		2	8	10
	Sub module: 3: Inspecting operating system				
1.	Inspect fuel system		0.2	0.8	1.0
2.	Inspect electric system		0.2	0.8	1.0
3.	Inspect water system		0.2	0.8	1.0
4.	Inspect safety devices		0.2	0.8	1.0
5.	Inspect steam distribution system		0.2	0.8	1.0
6.	Inspect steam pipe line drain water		0.2	0.8	1.0
7.	Inspect steam drainage		0.2	0.8	1.0
8.	Inspect steam pipe line and valves		0.2	0.8	1.0
9.	Inspect steam pressure		0.2	0.8	1.0
10.	Inspect steam temperature		0.2	0.8	1.0
11.	Inspect water tank		0.2	0.8	1.0
12.	Inspect water pipe line and valves	+	0.2	0.8	1.0
13.	Inspect y-Steiner	+	0.2	0.8	1.0
14.	Inspect water level	+	0.2	0.8	1.0
15.	Inspect non return valve		0.2	0.8	1.0
16.	Inspect water level indicator		0.2	0.8	1.0
17.	Inspect case fire		0.2	0.8	1.0
18.	Inspect sensors		0.2	0.8	1.0
19.	Inspect emergency switches		0.2	0.8	1.0
20.	Inspect traps and NRV/PRV		0.2	0.8	1.0
21.	Inspect current consumption indicator		0.2	0.8	1.0
22.	Inspect leakage of electricity		0.2	0.8	1.0
23.	Inspect reset bottom		0.2	0.8	1.0
24.	Inspect electric wiring		0.2	0.8	1.0
25.	Inspect water temperature		0.2	0.8	1.0
26.	Inspect fuel pipe line		0.2	0.8	1.0
27.	Inspect level of fuel indicator		0.2	0.8	1.0
28.	Inspect fuel release valve		0.2	0.8	1.0
29.	Inspect fuel valve		0.2	0.8	1.0
30.	Inspect fuel pressure		0.2	0.8	1.0
31.	Inspect fuel pump		0.2	0.8	1.0
32.	Inspect RYB voltage indicator		0.2	0.8	1.0
33.	Inspect blow down valves		0.2	0.8	1.0
34.	Inspect safety valves		0.2	0.8	1.0
35.	Inspect indicators and hooters		0.2	0.8	1.0
	Sub total:		7	28	35
	Module: 3: Standard operation procedures				
1	(SOP)		0.0	2.2	A 1
1.	Read/interpret boiler manuals/ guidelines/ books		0.8	3.3	4.1
2	/instructions/ drawing/ panel diagram		0.0	2.2	A 1
2.	Check fuel		0.8	3.3	4.1
3.	Check valve of fuel		0.8	3.3	4.1
4.	Check valve of water		0.8	3.3	4.1
5.	Check electricity		0.8	3.3	4.1

16	Cruitale and the fill modition	0.0	2.2	1.1
6.	Switch on the fill position	0.8	3.3	4.1
7.	Switch on the boiler	0.8	3.3	4.1
8.	Check drain water	0.8	3.3	4.1
9.	Switch on the fire position	0.8	3.3	4.1
10.	Check the temperature	0.8	3.3	4.1
11.	Close valve of drain	0.8	3.3	4.1
12.	Open the supply valve	0.8	3.3	4.1
13.	Turn off boiler	0.8	3.3	4.1
14.	Close the supply valve	0.8	3.3	4.1
15.	Open the blow down valve	0.8	3.3	4.1
16.	Check supply pressure	0.8	3.3	4.1
17.	Close the blow down valve	0.8	3.3	4.1
18.	Re-switch on fill position	0.8	3.3	4.1
19.	Check the temperature display	0.8	3.3	4.1
20.	Shunt down boiler equipment	0.8	3.3	4.1
	Sub total:	16	66	82
	Module: 4: Efficiency tests			
1.	Conduct air pressure test	0.5	1.5	2
2.	Conduct fuel pressure test	0.5	1.5	2
3.	Conduct steam pressure test	0.5	1.5	2
4.	Conduct steam temperature test	0.5	1.5	2
5.	Conduct fuel temperature test	0.5	1.5	2
6.	Conduct air temperature test	0.5	1.5	2
7.	Check voltage	0.5	1.5	2
ı /	LA LINA B VIIII/IMA			
8.	Check current	0.5	1.5	2
	Check current Sub total:			
	Check current Sub total: Module: 5: Servicing, repair and maintenance	0.5	1.5	2
	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance	0.5	1.5	2
	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing	0.5	1.5	2
	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting	0.5	1.5	2
	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance	0.5	1.5	2
8.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance	0.5	1.5 12	2 16
1.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts	0.5	1.5 12	2 16
1. 2.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines	0.5 4 0.6 0.6	1.5 12 2.4 2.4	2 16 3 3
1. 2. 3.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication	0.5 4 0.6 0.6 0.6	1.5 12 2.4 2.4 2.4	3 3 3 3
1. 2. 3. 4.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts	0.5 4 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4	3 3 3 3
1. 2. 3. 4. 5.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter	0.5 4 0.6 0.6 0.6 0.6 0.6	1.5 12 2.4 2.4 2.4 2.4 2.4 2.4	2 16 3 3 3 3 3
1. 2. 3. 4. 5. 6.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4	3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer  Clean water tank	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	2 16 3 3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7. 8.	Sub total:  Module: 5: Servicing, repair and maintenance Sub module: 1: Preventive maintenance Sub module: 2: Servicing Sub module: 3: Troubleshooting Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer  Clean water tank  Clean fuel tank	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	3 3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7. 8. 9.	Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance Sub module: 2: Servicing Sub module: 3: Troubleshooting Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer  Clean water tank  Clean fuel tank  Clean furnace	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	3 3 3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7. 8.	Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer  Clean water tank  Clean furnace  Remove dust/corrosion from panel board	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	3 3 3 3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7. 8. 9.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer  Clean water tank  Clean fuel tank  Clean furnace  Remove dust/corrosion from panel board  Sub total:	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	3 3 3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7. 8. 9.	Check current  Sub total:  Module: 5: Servicing, repair and maintenance  Sub module: 1: Preventive maintenance  Sub module: 2: Servicing  Sub module: 3: Troubleshooting  Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts  Perform preventive maintenance of pipe lines  Perform lubrication  Perform preventive maintenance of motor belts  Perform preventive maintenance of fuel filter  Perform preventive maintenance of economizer  Clean water tank  Clean fuel tank  Clean furnace  Remove dust/corrosion from panel board  Sub total:  Sub module: 2: Servicing	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	3 3 3 3 3 3 3 3 3 3
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	Sub total:  Module: 5: Servicing, repair and maintenance Sub module: 1: Preventive maintenance Sub module: 2: Servicing Sub module: 3: Troubleshooting Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts Perform preventive maintenance of pipe lines Perform lubrication Perform preventive maintenance of motor belts Perform preventive maintenance of fuel filter Perform preventive maintenance of economizer Clean water tank Clean fuel tank Clean furnace Remove dust/corrosion from panel board  Sub total: Sub module: 2: Servicing Perform servicing of tank(oil and water)	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	2 16 3 3 3 3 3 3 3 3 3 3 2
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	Sub total:  Module: 5: Servicing, repair and maintenance Sub module: 1: Preventive maintenance Sub module: 2: Servicing Sub module: 3: Troubleshooting Sub module: 4: Repair, replacement and maintenance Sub module: 1: Preventive maintenance Tighten loosen nut and bolts Perform preventive maintenance of pipe lines Perform lubrication Perform preventive maintenance of motor belts Perform preventive maintenance of fuel filter Perform preventive maintenance of economizer Clean water tank Clean fuel tank Clean furnace Remove dust/corrosion from panel board Sub total: Sub module: 2: Servicing Perform servicing of tank(oil and water) Perform servicing of water pump	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 1.6	2 16 3 3 3 3 3 3 3 3 3 3 2 2 2
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	Sub total:  Module: 5: Servicing, repair and maintenance Sub module: 1: Preventive maintenance Sub module: 2: Servicing Sub module: 3: Troubleshooting Sub module: 4: Repair, replacement and maintenance  Sub module: 1: Preventive maintenance  Tighten loosen nut and bolts Perform preventive maintenance of pipe lines Perform lubrication Perform preventive maintenance of motor belts Perform preventive maintenance of fuel filter Perform preventive maintenance of economizer Clean water tank Clean fuel tank Clean furnace Remove dust/corrosion from panel board  Sub total: Sub module: 2: Servicing Perform servicing of tank(oil and water)	0.5 4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6	2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4 2.4	2 16 3 3 3 3 3 3 3 3 3 3 2

5. Perform servicing of chimney         0.4         1.6         2           6. Perform servicing of pressure release valve (PRV)         0.4         1.6         2           7. Perform servicing of NRV         0.4         1.6         2           8. Perform servicing of steam trap         0.4         1.6         2           9. Perform servicing of safety valve         0.4         1.6         2           10. Perform servicing of conomizer         0.4         1.6         2           11. Perform servicing of in panel board wire and cables         0.4         1.6         2           12. Perform servicing of float valve         0.4         1.6         2           13. Perform servicing of vessel descaling         0.4         1.6         2           14. Perform servicing of vessel descaling         0.4         1.6         2           15. Perform servicing of strainer (fuel and water)         0.4         1.6         2           16. Perform servicing of bloeking glass         0.4         1.6         2           17. Perform servicing of photo cell         0.4         1.6         2           18. Perform servicing of horozel         0.4         1.6         2           19. Perform servicing of limit switch         0.4         1.6         2					
7.         Perform servicing of NRV         0.4         1.6         2           8.         Perform servicing of steam trap         0.4         1.6         2           9.         Perform servicing of safety valve         0.4         1.6         2           10.         Perform servicing of economizer         0.4         1.6         2           11.         Perform servicing of point valve         0.4         1.6         2           12.         Perform servicing of float valve         0.4         1.6         2           13.         Perform servicing of strainer (fuel and water)         0.4         1.6         2           14.         Perform servicing of two seed descaling         0.4         1.6         2           15.         Perform servicing of two seed descaling         0.4         1.6         2           15.         Perform servicing of box descaling         0.4         1.6         2           17.         Perform servicing of box descaling         0.4         1.6         2           17.         Perform servicing of polotocell         0.4         1.6         2           18.         Perform servicing of polotocell         0.4         1.6         2           19.         Perform servicing of		·	0.4	1.6	
8. Perform servicing of steam trap         0.4         1.6         2           9. Perform servicing of safety valve         0.4         1.6         2           10. Perform servicing of in panel board wire and cables         0.4         1.6         2           11. Perform servicing of in panel board wire and cables         0.4         1.6         2           12. Perform servicing of float valve         0.4         1.6         2           13. Perform servicing of vessel descaling         0.4         1.6         2           14. Perform servicing of twelcycoil         0.4         1.6         2           15. Perform servicing of twelcycoil         0.4         1.6         2           16. Perform servicing of photo cell         0.4         1.6         2           17. Perform servicing of photo cell         0.4         1.6         2           18. Perform servicing of lectric rods         0.4         1.6         2           20. Perform Servicing of limit switch         0.4         1.6         2           30. Perform Servicing of limit switch         0.4         1.6         2           4. Toubleshoot burner problems         0.7         4         4.7           5. Troubleshoot steam pass         0.7         3         3.7			0.4		
9.         Perform servicing of economizer         0.4         1.6         2           10.         Perform servicing of economizer         0.4         1.6         2           11.         Perform servicing of in panel board wire and cables         0.4         1.6         2           12.         Perform servicing of in panel board wire and cables         0.4         1.6         2           13.         Perform servicing of strainer (fuel and water)         0.4         1.6         2           14.         Perform servicing of strainer (fuel and water)         0.4         1.6         2           15.         Perform servicing of Itabe/coil         0.4         1.6         2           16.         Perform servicing of Photo cell         0.4         1.6         2           17.         Perform servicing of hobot cell         0.4         1.6         2           18.         Perform servicing of lectric rods         0.4         1.6         2           19.         Perform Servicing of limit switch         8         32         40           20.         Perform Servicing of limit switch         8         32         40           21.         Troubleshoot burner problems         0.7         4         4.7           2. <td>7.</td> <td>Perform servicing of NRV</td> <td>0.4</td> <td>1.6</td> <td>2</td>	7.	Perform servicing of NRV	0.4	1.6	2
10.   Perform servicing of in panel board wire and cables   0.4   1.6   2     2.   Perform servicing of float valve   0.4   1.6   2     2.   Perform servicing of ressel descaling   0.4   1.6   2     3.   Perform servicing of vessel descaling   0.4   1.6   2     4.   Perform servicing of strainer (fuel and water)   0.4   1.6   2     5.   Perform servicing of tube/coil   0.4   1.6   2     7.   Perform servicing of looking glass   0.4   1.6   2     8.   Perform servicing of photo cell   0.4   1.6   2     9.   Perform servicing of nozzle   0.4   1.6   2     18.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of lectric rods   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     20.   Perform servicing of limit switch   0.4   1.6   2     21.   Troubleshoot burner problems   0.7   4   4.7     22.   Troubleshoot burner problems   0.7   4   4.7     3.   Troubleshoot burner problems   0.7   3   3.7     4.   Troubleshoot electric circuit   0.7   3   3.7     5.   Troubleshoot team pass   0.7   3   3.7     6.   Apply hooter for trouble shooting   0.6   3   3.6     Sub module: 4: Repair, replacement and maintenance   0.6   3.2   3.8     3.   Maintain fuel level indicator   0.6   3.2   3.8     4.   Maintain fuel filter   0.6   3.2   3.8     5.   Maintain/repair fuel pump   0.6   3.2   3.8     6.   Maintain/repair fuel tank   0.6   3.2   3.8     7.   Maintain/repair fuel pile line   0.6   3.2   3.8     8.   Maintain/repair fuel pile line   0.6   3.2   3.8     9.   Maintain/repair puersure gauge   0.6   3.2   3.8     10.   Maintain/repair puersure gauge   0.6   3.2   3.8     11.   Maintain/repair puersure gauge   0.6   3.2   3.8     12.   Maintain/repair iner jacket   0.6   3.2   3.8     13.   Maintain/repair iner jacket   0.6   3.2   3.8     14.   Maintain/repair iner jacket   0.6   3.2   3.8     15.   Maintain/repair air blower   0.6   3.2   3.8     16.	8.		0.4	1.6	
1.   Perform servicing of in panel board wire and cables   0.4   1.6   2     12.   Perform servicing of the valve   0.4   1.6   2     13.   Perform servicing of vessel descaling   0.4   1.6   2     14.   Perform servicing of strainer (fuel and water)   0.4   1.6   2     15.   Perform servicing of strainer (fuel and water)   0.4   1.6   2     16.   Perform servicing of looking glass   0.4   1.6   2     17.   Perform servicing of photo cell   0.4   1.6   2     18.   Perform servicing of photo cell   0.4   1.6   2     19.   Perform servicing of looking glass   0.4   1.6   2     19.   Perform servicing of lectric rods   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     21.   Troubleshoot burner problems   0.7   4   4.7     22.   Troubleshoot water coil problems   0.7   4   4.7     3.   Troubleshoot water coil problems   0.7   3   3.7     4.   Troubleshoot steam pass   0.7   3   3.7     5.   Troubleshoot fuel supply   0.6   3   3.6     6.   Apply hooter for trouble shooting   0.6   3   3.6     Sub module: 4: Repair, replacement and maintenance   0.6   3.2   3.8     3.   Maintain fuel level indicator   0.6   3.2   3.8     4.   Maintain fuel litter   0.6   3.2   3.8     5.   Maintain/repair fuel pump   0.6   3.2   3.8     6.   Maintain/repair fuel tank   0.6   3.2   3.8     7.   Maintain/repair puel tenk   0.6   3.2   3.8     8.   Maintain/repair water tank   0.6   3.2   3.8     9.   Maintain/repair water tank   0.6   3.2   3.8     10.   Maintain/repair uner gauge   0.6   3.2   3.8     11.   Maintain/repair intel evel switch/pipe/glass   0.6   3.2   3.8     12.   Maintain/repair intel evel switch/pipe/glass   0.6   3.2   3.8     13.   Maintain/repair interer ignition transformer   0.6   3.2   3.8     14.   Maintain/repair interer ignition transformer   0.6   3.2   3.8     15.   Maintain/repair interer ignition t	9.		0.4	1.6	2
12.   Perform servicing of float valve	10.	Perform servicing of economizer	0.4	1.6	2
13.   Perform servicing of vessel descaling   0.4   1.6   2     14.   Perform servicing of strainer (fuel and water)   0.4   1.6   2     15.   Perform servicing of fube/coil   0.4   1.6   2     16.   Perform servicing of photo cell   0.4   1.6   2     17.   Perform servicing of photo cell   0.4   1.6   2     18.   Perform servicing of pozzle   0.4   1.6   2     19.   Perform servicing of electric rods   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     21.   Sub module: 3: Troubleshooting   0.7   4   4.7     22.   Troubleshoot burner problems   0.7   4   4.7     3.   Troubleshoot water coil problems   0.7   4   4.7     4.   Troubleshoot electric circuit   0.7   3   3.7     5.   Troubleshoot steam pass   0.7   3   3.6     6.   Apply hooter for trouble shooting   0.6   3   3.6     6.   Apply hooter for trouble shooting   0.6   3   3.6     8.   Maintain fuel level indicator   0.6   3.2   3.8     9.   Maintain fuel level indicator   0.6   3.2   3.8     10.   Maintain fuel filter   0.6   3.2   3.8     11.   Maintain/repair fuel pump   0.6   3.2   3.8     12.   Maintain/repair fuel pipe line   0.6   3.2   3.8     13.   Maintain/repair valves   0.6   3.2   3.8     14.   Maintain/repair burner   0.6   3.2   3.8     15.   Maintain/repair burner   0.6   3.2   3.8     16.   Maintain/repair inner jacket   0.6   3.2   3.8     17.   Maintain/repair inner jacket   0.6   3.2   3.8     18.   Maintain/repair inner jacket   0.6   3.2   3.8     19.   Maintain/repair air blower   0.6   3.2   3.8     10.   Maintain/repair inner jacket   0.6   3.2   3.8     10.   Maintain/repair inner jacket   0.6   3.2   3.8     10.   Maintain/repair air blower   0.6	11.	Perform servicing of in panel board wire and cables	0.4	1.6	2
14.   Perform servicing of strainer (fuel and water)   0.4   1.6   2     15.   Perform servicing of lube/coil   0.4   1.6   2     16.   Perform servicing of ploking glass   0.4   1.6   2     17.   Perform servicing of photo cell   0.4   1.6   2     18.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of lectric rods   0.4   1.6   2     19.   Perform servicing of electric rods   0.4   1.6   2     19.   Perform servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     19.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of photo cell   0.4   1.6   2     19.   Perform servicing of photo cell   0.4   1.6   2     19.   Perform servicing of photo cell   0.4   1.6   2     10.   Perform servicing of photo cell   0.4   1.6   2     10.   Perform servicing of photo cell   0.7   3   3.7     10.   Turbleshoot burner problems   0.7   4   4.7     10.   Sub module: 3: Troubleshooting   0.7   4   4.7     11.   Turbleshoot burner problems   0.7   4   4.7     12.   Troubleshoot duet critic circuit   0.7   3   3.7     13.   Troubleshoot duet gupply   0.6   3.2   3.8     14.   Maintain/repair fuel pup   0.6   3.2   3.8     15.   Maintain/repair fuel pipe line   0.6   3.2   3.8     16.   Maintain/repair burner   0.6   3.2   3.8     17.   Maintain/repair burner ignition transformer   0.6   3.2   3.8     18.   Maintain/repair pressure gauge   0.6   3.2   3.8     19.   Maintain/repair inner jacket   0.6   3.2   3.8     10.   Maintain/repair inner jacket   0.6   3.2   3.8     10.   Maintain/repair inner jacket   0.6   3.2   3.8     10.   Maintain/repair inner jacket   0.6   3.2   3.8     10.	12.	Perform servicing of float valve	0.4	1.6	2
15.   Perform servicing of tube/coil   0.4   1.6   2     16.   Perform servicing of looking glass   0.4   1.6   2     17.   Perform servicing of photo cell   0.4   1.6   2     18.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of electric rods   0.4   1.6   2     19.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     21.   Sub total:   8   32   40     22.   Sub module: 3: Troubleshooting   0.7   4   4.7     2.   Troubleshoot burner problems   0.7   4   4.7     3.   Troubleshoot water coil problems   0.7   3   3.7     4.   Troubleshoot steam pass   0.7   3   3.7     5.   Troubleshoot fuel supply   0.6   3   3.6     6.   Apply hooter for trouble shooting   0.6   3   3.6     5.   Sub module: 4: Repair, replacement and maintenance	13.	Perform servicing of vessel descaling	0.4	1.6	2
16.   Perform servicing of looking glass   0.4   1.6   2     17.   Perform servicing of photo cell   0.4   1.6   2     18.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of electric rods   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Sub total:   8   32   40     21.   Troubleshoot burner problems   0.7   4   4.7     22.   Troubleshoot water coil problems   0.7   3   3.7     33.   Troubleshoot telectric circuit   0.7   3   3.7     4.   Troubleshoot steam pass   0.7   3   3.7     5.   Troubleshoot fuel supply   0.6   3   3.6     6.   Apply hooter for trouble shooting   0.6   3   3.6     8.   Maintain fuel level indicator   0.6   3.2   3.8     9.   Maintain fuel level indicator   0.6   3.2   3.8     10.   Maintain/repair fuel tank   0.6   3.2   3.8     11.   Maintain/repair fuel tank   0.6   3.2   3.8     12.   Maintain/repair pressure gauge   0.6   3.2   3.8     13.   Maintain/repair water tank   0.6   3.2   3.8     14.   Maintain/repair water tank   0.6   3.2   3.8     15.   Maintain/repair perssure gauge   0.6   3.2   3.8     16.   Maintain/repair perssure gauge   0.6   3.2   3.8     17.   Maintain/repair in lenter   0.6   3.2   3.8     18.   Maintain/repair in lenter   0.6   3.2   3.8     19.   Maintain/repair in lenter   0.6   3.2   3.8     10.   Maintain/repair in lenter   0.6   3.2   3.8     11.   Maintain/repair in lenter   0.6   3.2   3.8     12.   Maintain/repair in lenter   0.6   3.2   3.8     13.   Maintain/repair in lenter   0.6   3.2   3.8     14.   Maintain/repair in lenter   0.6   3.2   3.8     15.   Maintain/repair ine	14.	Perform servicing of strainer (fuel and water)	0.4	1.6	2
17.   Perform servicing of photo cell	15.	Perform servicing of tube/coil	0.4	1.6	2
18.   Perform servicing of nozzle   0.4   1.6   2     19.   Perform servicing of electric rods   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     20.   Perform Servicing of limit switch   0.4   1.6   2     21.   Sub module: 3: Troubleshooting   1.   Troubleshoot burner problems   0.7   4   4.7     2.   Troubleshoot water coil problems   0.7   4   4.7     3.   Troubleshoot steam pass   0.7   3   3.7     4.   Troubleshoot steam pass   0.7   3   3.7     5.   Troubleshoot fuel supply   0.6   3   3.6     6.   Apply hooter for trouble shooting   0.6   3   3.6     8.   Sub module: 4: Repair, replacement and maintenance   1.   Maintain fuel level indicator   0.6   3.2   3.8     9.   Maintain fuel level indicator   0.6   3.2   3.8     14.   Maintain fuel filter   0.6   3.2   3.8     15.   Maintain/repair fuel tank   0.6   3.2   3.8     16.   Maintain/repair fuel pipe line   0.6   3.2   3.8     17.   Maintain/repair walves   0.6   3.2   3.8     18.   Maintain/repair water tank   0.6   3.2   3.8     19.   Maintain/repair pressure gauge   0.6   3.2   3.8     10.   Maintain/repair pressure gauge   0.6   3.2   3.8     11.   Maintain/repair pressure gauge   0.6   3.2   3.8     12.   Maintain/repair pressure gauge   0.6   3.2   3.8     13.   Maintain/repair in heater   0.6   3.2   3.8     14.   Maintain/repair in heater   0.6   3.2   3.8     15.   Maintain/repair in heater   0.6   3.2   3.8     16.   Maintain/repair in heater   0.6   3.2   3.8     17.   Maintain/repair inner jackt   0.6   3.2   3.8     18.   Maintain/repair inner jackt   0.6   3.2   3.8     19.   Maintain/repair inner jackt   0.6   3.2   3.8     20.   Replace gland   0.6   3.2   3.8     20.   Replace	16.	Perform servicing of looking glass	0.4	1.6	2
Perform servicing of electric rods	17.	Perform servicing of photo cell	0.4	1.6	2
20.   Perform Servicing of limit switch   Sub total:   8   32   40	18.		0.4	1.6	
Sub module: 3: Troubleshooting	19.		0.4	1.6	
Sub module: 3: Troubleshooting	20.	Perform Servicing of limit switch	0.4	1.6	2
1.       Troubleshoot burner problems       0.7       4       4.7         2.       Troubleshoot water coil problems       0.7       4       4.7         3.       Troubleshoot electric circuit       0.7       3       3.7         4.       Troubleshoot steam pass       0.6       3       3.6         5.       Troubleshoot fuel supply       0.6       3       3.6         6.       Apply hooter for trouble shooting       0.6       3       3.6         Sub module: 4: Repair, replacement and maintenance         1.       Maintain fuel level indicator       0.6       3.2       3.8         2.       Maintain repair fuel pump       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain/repair fuel tank       0.6       3.2       3.8         5.       Maintain/repair fuel pipe line       0.6       3.2       3.8         6.       Maintain/repair fuel pipe line       0.6       3.2       3.8         7.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.		Sub total:	8	32	40
2.       Troubleshoot water coil problems       0.7       4       4.7         3.       Troubleshoot electric circuit       0.7       3       3.7         4.       Troubleshoot steam pass       0.7       3       3.7         5.       Troubleshoot fuel supply       0.6       3       3.6         6.       Apply hooter for trouble shooting       0.6       3       3.6         Sub total:       4       20       24         Sub module: 4: Repair, replacement and maintenance         1.       Maintain fuel level indicator       0.6       3.2       3.8         2.       Maintain fuel level indicator       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain/repair fuel pump       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair fuel pipe line       0.6       3.2       3.8         7.       Maintain/repair vater tank       0.6       3.2       3.8         8.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair r		Sub module: 3: Troubleshooting			
3.       Troubleshoot electric circuit       0.7       3       3.7         4.       Troubleshoot steam pass       0.7       3       3.7         5.       Troubleshoot fuel supply       0.6       3       3.6         6.       Apply hooter for trouble shooting       0.6       3       3.6         Sub total:       4       20       24         Sub module: 4: Repair, replacement and maintenance         1.       Maintain fuel level indicator       0.6       3.2       3.8         2.       Maintain fuel level indicator       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain/repair fuel tank       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair valves       0.6       3.2       3.8         7.       Maintain/repair pulpe line       0.6       3.2       3.8         9.       Maintain/repair water tank       0.6       3.2       3.8         10.       Maintain/repair pressure g	1.	Troubleshoot burner problems	0.7	4	4.7
4.       Troubleshoot steam pass       0.7       3       3.7         5.       Troubleshoot fuel supply       0.6       3       3.6         6.       Apply hooter for trouble shooting       0.6       3       3.6         Sub total:       4       20       24         Sub module: 4: Repair, replacement and maintenance         1.       Maintain fuel level indicator       0.6       3.2       3.8         2.       Maintain fuel level indicator       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain/repair fuel pump       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair water tank       0.6       3.2       3.8         10.       Maintain/repair pressure gauge       0.6       3.2       3.8         12.       Maintain/repa	2.	Troubleshoot water coil problems	0.7	4	4.7
5.       Troubleshoot fuel supply       0.6       3       3.6         6.       Apply hooter for trouble shooting       0.6       3       3.6         Sub total:       4       20       24         Sub module: 4: Repair, replacement and maintenance         1.       Maintain fuel level indicator       0.6       3.2       3.8         2.       Maintain fuel level indicator       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain/repair fuel pump       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair pice nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair burner       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair pair water tank       0.6       3.2       3.8         11.       Maintain/repair pessure gauge       0.6       3.2       3.8         12.       Maintain/repair le	3.	Troubleshoot electric circuit	0.7	3	3.7
6.         Apply hooter for trouble shooting         0.6         3         3.6           Sub total:         4         20         24           Sub module: 4: Repair, replacement and maintenance           1.         Maintain fuel level indicator         0.6         3.2         3.8           2.         Maintain in vent         0.6         3.2         3.8           3.         Maintain/repair fuel pump         0.6         3.2         3.8           4.         Maintain/repair fuel pump         0.6         3.2         3.8           5.         Maintain/repair fuel tank         0.6         3.2         3.8           6.         Maintain/repair replace nozzle         0.6         3.2         3.8           7.         Maintain/repair valves         0.6         3.2         3.8           8.         Maintain/repair pulp line         0.6         3.2         3.8           9.         Maintain/repair burner         0.6         3.2         3.8           10.         Maintain/repair water tank         0.6         3.2         3.8           11.         Maintain/repair peressure gauge         0.6         3.2         3.8           12.         Maintain/repair peressure gauge	4.	Troubleshoot steam pass	0.7	3	3.7
Sub module: 4: Repair, replacement and maintenance	5.	Troubleshoot fuel supply	0.6	3	3.6
Sub module: 4: Repair, replacement and maintenance	6.	Apply hooter for trouble shooting	0.6	3	3.6
maintenance       0.6       3.2       3.8         2. Maintain fuel level indicator       0.6       3.2       3.8         3. Maintain repair fuel pump       0.6       3.2       3.8         4. Maintain fuel filter       0.6       3.2       3.8         5. Maintain/repair fuel tank       0.6       3.2       3.8         6. Maintain/repair /replace nozzle       0.6       3.2       3.8         7. Maintain/repair valves       0.6       3.2       3.8         8. Maintain/repair fuel pipe line       0.6       3.2       3.8         9. Maintain/repair burner       0.6       3.2       3.8         10. Maintain/repair water tank       0.6       3.2       3.8         11. Maintain fuel Steiner       0.6       3.2       3.8         12. Maintain/repair pressure gauge       0.6       3.2       3.8         13. Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14. Maintain/repair burner ignition transformer       0.6       3.2       3.8         15. Maintain/repair burner ignition transformer       0.6       3.2       3.8         16. Maintain/repair hooter       0.6       3.2       3.8         17. Maintain/repair inner jacket       0.6<		Sub total:	4	20	24
maintenance       0.6       3.2       3.8         2. Maintain fuel level indicator       0.6       3.2       3.8         3. Maintain repair fuel pump       0.6       3.2       3.8         4. Maintain fuel filter       0.6       3.2       3.8         5. Maintain/repair fuel tank       0.6       3.2       3.8         6. Maintain/repair /replace nozzle       0.6       3.2       3.8         7. Maintain/repair valves       0.6       3.2       3.8         8. Maintain/repair fuel pipe line       0.6       3.2       3.8         9. Maintain/repair burner       0.6       3.2       3.8         10. Maintain/repair water tank       0.6       3.2       3.8         11. Maintain fuel Steiner       0.6       3.2       3.8         12. Maintain/repair pressure gauge       0.6       3.2       3.8         13. Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14. Maintain/repair burner ignition transformer       0.6       3.2       3.8         15. Maintain/repair burner ignition transformer       0.6       3.2       3.8         16. Maintain/repair hooter       0.6       3.2       3.8         17. Maintain/repair inner jacket       0.6<		Sub module: 4: Repair, replacement and			
1.       Maintain fuel level indicator       0.6       3.2       3.8         2.       Maintain air vent       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain fuel filter       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         15.       Maintain/repair hooter       0.6       3.2					
2.       Maintain air vent       0.6       3.2       3.8         3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain fuel filter       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair /replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       <	1.	Maintain fuel level indicator	0.6	3.2	3.8
3.       Maintain/repair fuel pump       0.6       3.2       3.8         4.       Maintain fuel filter       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair /replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair riner jacket       0.6       3.2<	2.		0.6	3.2	3.8
4.       Maintain fuel filter       0.6       3.2       3.8         5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair /replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain/repair water tank       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair air blower       0.6       <		Maintain/repair fuel pump	0.6	3.2	3.8
5.       Maintain/repair fuel tank       0.6       3.2       3.8         6.       Maintain/repair /replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6	<b>——</b>	1 1 1			
6.       Maintain/repair /replace nozzle       0.6       3.2       3.8         7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6       3.2       3.8         20.       Replace gland       0.6       3.					
7.       Maintain/repair valves       0.6       3.2       3.8         8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6       3.2       3.8         20.       Replace gland       0.6       3.2       3.8	6.		0.6	3.2	3.8
8.       Maintain/repair fuel pipe line       0.6       3.2       3.8         9.       Maintain/repair burner       0.6       3.2       3.8         10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6       3.2       3.8         20.       Replace gland       0.6       3.2       3.8	7.	1 1	0.6	3.2	3.8
10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6       3.2       3.8         20.       Replace gland       0.6       3.2       3.8		Maintain/repair fuel pipe line	0.6	3.2	3.8
10.       Maintain/repair water tank       0.6       3.2       3.8         11.       Maintain fuel Steiner       0.6       3.2       3.8         12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6       3.2       3.8         20.       Replace gland       0.6       3.2       3.8	9.	1 11	0.6	3.2	3.8
12.       Maintain/repair pressure gauge       0.6       3.2       3.8         13.       Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14.       Maintain/repair oil heater       0.6       3.2       3.8         15.       Maintain/repair burner ignition transformer       0.6       3.2       3.8         16.       Maintain/repair hooter       0.6       3.2       3.8         17.       Maintain/repair inner jacket       0.6       3.2       3.8         18.       Maintain/repair/replace V-belt       0.6       3.2       3.8         19.       Maintain/repair air blower       0.6       3.2       3.8         20.       Replace gland       0.6       3.2       3.8	10.	Maintain/repair water tank	0.6	3.2	3.8
13. Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14. Maintain/repair oil heater       0.6       3.2       3.8         15. Maintain/repair burner ignition transformer       0.6       3.2       3.8         16. Maintain/repair hooter       0.6       3.2       3.8         17. Maintain/repair inner jacket       0.6       3.2       3.8         18. Maintain/repair/replace V-belt       0.6       3.2       3.8         19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8	11.	Maintain fuel Steiner	0.6	3.2	3.8
13. Maintain/repair level switch/pipe/glass       0.6       3.2       3.8         14. Maintain/repair oil heater       0.6       3.2       3.8         15. Maintain/repair burner ignition transformer       0.6       3.2       3.8         16. Maintain/repair hooter       0.6       3.2       3.8         17. Maintain/repair inner jacket       0.6       3.2       3.8         18. Maintain/repair/replace V-belt       0.6       3.2       3.8         19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8	12.	Maintain/repair pressure gauge	0.6	3.2	3.8
15. Maintain/repair burner ignition transformer       0.6       3.2       3.8         16. Maintain/repair hooter       0.6       3.2       3.8         17. Maintain/repair inner jacket       0.6       3.2       3.8         18. Maintain/repair/replace V-belt       0.6       3.2       3.8         19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8	13.		0.6	3.2	3.8
16. Maintain/repair hooter       0.6       3.2       3.8         17. Maintain/repair inner jacket       0.6       3.2       3.8         18. Maintain/repair/replace V-belt       0.6       3.2       3.8         19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8	14.	iviaintain/repair ievei switch/pipe/glass	0.0		
17. Maintain/repair inner jacket       0.6       3.2       3.8         18. Maintain/repair/replace V-belt       0.6       3.2       3.8         19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8		Maintain/repair oil heater	1		3.8
18. Maintain/repair/replace V-belt       0.6       3.2       3.8         19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8	15.	Maintain/repair oil heater	0.6	3.2	
19. Maintain/repair air blower       0.6       3.2       3.8         20. Replace gland       0.6       3.2       3.8	16.	Maintain/repair oil heater  Maintain/repair burner ignition transformer  Maintain/repair hooter	0.6	3.2 3.2 3.2	3.8 3.8
20. Replace gland         0.6         3.2         3.8	16.	Maintain/repair oil heater  Maintain/repair burner ignition transformer  Maintain/repair hooter	0.6 0.6 0.6	3.2 3.2 3.2	3.8 3.8
1 0	16. 17.	Maintain/repair oil heater  Maintain/repair burner ignition transformer  Maintain/repair hooter  Maintain/repair inner jacket	0.6 0.6 0.6 0.6	3.2 3.2 3.2 3.2	3.8 3.8 3.8
21   Replace relay	16. 17. 18.	Maintain/repair oil heater  Maintain/repair burner ignition transformer  Maintain/repair hooter  Maintain/repair inner jacket  Maintain/repair/replace V-belt  Maintain/repair air blower	0.6 0.6 0.6 0.6 0.6	3.2 3.2 3.2 3.2 3.2 3.2	3.8 3.8 3.8 3.8 3.8
21.   Replace Iciay     0.0   3.2   3.0	16. 17. 18. 19.	Maintain/repair oil heater  Maintain/repair burner ignition transformer  Maintain/repair hooter  Maintain/repair inner jacket  Maintain/repair/replace V-belt  Maintain/repair air blower  Replace gland	0.6 0.6 0.6 0.6 0.6 0.6	3.2 3.2 3.2 3.2 3.2 3.2	3.8 3.8 3.8 3.8 3.8

22.	Replace photo cell sensor		0.6	3.2	3.8
23.	Replace pump bearing		0.6	3.2	3.8
24.	Replace oil seal		0.6	3.2	3.8
25.	Replace bulb indicator / switches		0.6	3.2	3.8
	Sub total:		15	80	95
	Total:		85	305	390
	Module: 6: Common module		00		0,0
	Sub module: 1: Applied math				
	Sub module: 2: Occupational health and safety				
	Sub module: 3: First aid				
	Sub module: 4: HIV/AIDS				
	Sub module: 5: Communication				
	Sub module: 6: Small enterprise development				
	Tools, materials and equipment				
	Wrench set				
	Allen key set				
	■ Venire caliper				
	Flat brush				
	Round brush				
	Gauge meter				
	■ Anometer				
	<ul><li>Pliers</li></ul>				
	■ Pin punch				
	■ Die set				
	■ Thermometer				
	■ Safety goggles				
	<ul><li>Line/phase tester</li></ul>				
	■ Screw driver				
	■ File				
	■ Taco meter				
	■ Seal				
	■ Water test kit				
	• Multimeter				
	<ul> <li>Hacksaw frame</li> </ul>				
	• Vice				
	<ul><li>Grease gun</li><li>Lather apron</li></ul>				
	Pipe/slide wrench				
	- Pipe/ slide wielich - Chisel				
	■ Drill machine				
	Reading materials				
	Instructor selected textbooks/ reference books /	+			
	manuals/ journals and articles available in the market				
	<ul> <li>Instructor prepared books, handouts, notes and manuals</li> </ul>				
	Facilities				
	Classroom (Spacious)				
	<ul><li>Well equipped workshop</li></ul>				
	Boilers				
	Principal' room				
	Admin/Account room				
	Reception room			1	

■ Trainers room		
<ul> <li>Still and Video Camera</li> </ul>		
■ A/V room		
<ul><li>Vehicle(optional)</li></ul>		
■ Canteen(optional)		
<ul><li>Hostel(optional)</li></ul>		
■ OHP		
<ul> <li>Multimedia projector</li> </ul>		
■ Computer/Lap top		
<ul> <li>Photocopier/Scanner/Printer</li> </ul>		
<ul><li>Internet facilities</li></ul>		
<ul><li>Telephone</li></ul>		
■ Fax		
<ul> <li>Well equipped library</li> </ul>		
■ Water supply		
■ Power supply		

### **Duties & tasks Used (from DACUM)**

Duty: A: Enforce safety

### Tasks:

- 1. Enforce personal safety
- 2. Enforce fuel valve for safety to fuel pump
- 3. Enforce setting point of fuel
- 4. Enforce point water level
- 5. Enforce sensor functioning
- 6. Ensure boiler room cleanliness
- 7. Enforce buzzer (Hotter) functioning
- 8. Enforce blower setting
- 9. Enforce to the pipe line checking (fuel/water)
- 10. Enforce safety valve conditioning
- 11. Enforce trap valve functioning
- 12. Minimize pollution
- 13. Enforce setting temperature

### Duty: B: Handle tools/equipments/materials

### Tasks:

- 1. Handle wrench set
- 2. Handle pliers
- 3. Handle line/phase tester
- 4. Handle multimeter
- 5. Handle pipe/slide wrench
- 6. Handle hammer
- 7. Handle Allen key
- 8. Handle pin punch
- 9. Handle screw driver
- 10. Handle hacksaw frame
- 11. Handle chisel
- 12. Handle sprit level
- 13. Handle venire caliper
- 14. Handle die set
- 15. Handle file
- 16. Handle vice
- 17. Handle drill machine
- 18. Handle nozzle brush
- 19. Handle flat brush and round brush
- 20. Handle thermometer
- 21. Handle taco meter
- 22. Handle grease gun
- 23. Handle oil-can
- 24. Handle holder
- 25. Handle welding machine
- 26. Handle safety goggles
- 27. Handle hand seal
- 28. Handle lather apron

- 29. Handle chipping hammer
- 30. Handle PH meter
- 31. Handle gauge meter
- 32. Handle arc welding rod
- 33. Handle water test kit
- 34. Handle anometer
- 35. Handle fuel (kerosene/furnace oil/husu)
- 36. Handle pressure gauge

# Duty: C: Perform identification of components/devices/accessories Tasks:

- 1. Identify burner
- 2. Identify decider plate
- 3. Identify y-Steiner
- 4. Identify non-return valve
- 5. Identify safety valve
- 6. Identify level switch/pipe/glass
- 7. Identify nozzle
- 8. Identify fuel pump
- 9. Identify ball valve
- 10. Identify gate valve
- 11. Identify water pump
- 12. Identify firing looking glass
- 13. Identify release valve
- 14. Identify coil
- 15. Identify safety head
- 16. Identify electronic rod
- 17. Identify pressure switch
- 18. Identify butterfly valve
- 19. Identify inner jacket
- 20. Identify economizer
- 21. Identify fuel filter/hose pipes
- 22. Identify cap-robber
- 23. Identify cupper pipe
- 24. Identify flinch
- 25. Identify air blower
- 26. Identify external (over) head
- 27. Identify external body
- 28. Identify flexible pipes
- 29. Identify pressure gauge
- 30. Identify photocell/sensors
- 31. Identify heat proof cement (concrete)
- 32. Identify foundation bolts
- 33. Identify gaskets (heat proof)
- 34. Identify V-belt
- 35. Identify water tank/ fuel tank
- 36. Identify hooter
- 37. Identify burner ignition transformer
- 38. Identify metal pipes/ water tank
- 39. Identify heat proof gland

### 40. Identify oil heater

## Duty: D: Control/maintain fuel system Tasks:

- 1. Read/Interpret fuel system
- 2.Control/maintain fuel level
- 3. Control/maintain fuel temperature
- 4. Control/maintain fuel quality
- 5.Control/maintain fuel pressure
- 6.Control/maintain fuel quantity

## Duty: E: Control /maintain water system Tasks:

- 1. Read/Interpret water system
- 2. Control/maintain water level
- 3. Control/maintain water temperature
- 4. Control hardness
- 5. Control/maintain water PH
- 6. Control/maintain TDS
- 7. Control/maintain water pressure
- 8. Maintain water quantity

# Duty: F: Inspect operating system <u>Tasks</u>:

- 1. Inspect fuel system
- 2. Inspect electric system
- 3. Inspect water system
- 4. Inspect safety devices
- 5. Inspect steam distribution system
- 6. Inspect steam pipe line drain water
- 7. Inspect steam drainage
- 8. Inspect steam pipe line and valves
- 9. Inspect steam pressure
- 10. Inspect steam temperature
- 11. Inspect water tank
- 12. Inspect water pipe line and valves
- 13. Inspect y-Steiner
- 14. Inspect water level
- 15. Inspect non return valve
- 16. Inspect water level indicator
- 17. Inspect case fire
- 18. Inspect sensors
- 19. Inspect emergency switches
- 20. Inspect traps and NRV/PRV
- 21. Inspect current consumption indicator
- 22. Inspect leakage of electricity
- 23. Inspect reset bottom
- 24. Inspect electric wiring
- 25. Inspect water temperature
- 26. Inspect fuel pipe line

- 27. Inspect level of fuel indicator
- 28. Inspect fuel release valve
- 29. Inspect fuel valve
- 30. Inspect fuel pressure
- 31. Inspect fuel pump
- 32. Inspect RYB voltage indicator
- 33. Inspect blow down valves
- 34. Inspect safety valves
- 35. Inspect indicators and hooters

### Duty: G: Perform standard operation procedures (SOP)

### Tasks:

1. Read/interpret boiler manuals/ guidelines/ books /instructions/ drawing/ panel diagram

- 2. Check fuel
- 3. Check valve of fuel
- 4. Check valve of water
- 5. Check electricity
- 6. Switch on the fill position
- 7. Switch on the boiler
- 8. Check drain water
- 9. Switch on the fire position
- 10. Check the temperature
- 11. Close valve of drain
- 12. Open the supply valve
- 13. Turn off boiler
- 14. Close the supply valve
- 15. Open the blow down valve
- 16. Check supply pressure
- 17. Close the blow down valve
- 18. Re-switch on fill position
- 19. Check the temperature display
- 20. Shunt down boiler equipment

### Duty: H: Conduct efficiency tests

### Tasks:

- 1. Conduct air pressure test
- 2. Conduct fuel pressure test
- 3. Conduct steam pressure test
- 4. Conduct steam temperature test
- 5. Conduct fuel temperature test
- 6. Conduct air temperature test
- 7. Check voltage
- 8. Check current

### Duty: I: Perform preventive maintenance

### Tasks:

- 1. Tighten loosen nut and bolts
- 2. Perform preventive maintenance of pipe lines
- 3. Perform lubrication

- 4. Perform preventive maintenance of motor belts
- 5. Perform preventive maintenance of fuel filter
- 6. Perform preventive maintenance of economizer
- 7. Clean water tank
- 8. Clean fuel tank
- 9. Clean furnace
- 10. Remove dust/corrosion from panel board

### Duty: J: Perform servicing

### Tasks:

- 1. Perform servicing of tank (oil and water)
- 2. Perform servicing of water pump
- 3. Perform Servicing of sensor
- 4. Perform servicing of contactor and relay
- 5. Perform servicing of chimney
- 6. Perform servicing of pressure release valve (PRV)
- 7. Perform servicing of NRV
- 8. Perform servicing of steam trap
- 9. Perform servicing of safety valve
- 10. Perform servicing of economizer
- 11. Perform servicing of in panel board wire and cables
- 12. Perform servicing of float valve
- 13. Perform servicing of vessel descaling
- 14. Perform servicing of strainer (fuel and water)
- 15. Perform servicing of tube/coil
- 16. Perform servicing of looking glass
- 17. Perform servicing of photo cell
- 18. Perform servicing of nozzle
- 19. Perform servicing of electric rods
- 20. Perform Servicing of limit switch

### **Duty: K: Troubleshoot problems**

### Tasks:

- 1. Troubleshoot burner problems
- 2. Troubleshoot water coil problems
- 3. Troubleshoot electric circuit
- 4. Troubleshoot steam pass
- 5. Troubleshoot fuel supply
- 6. Apply hooter for trouble shooting

### Duty: L: Maintain/repair/replace components/devices/accessories

#### Tasks:

- 1. Maintain fuel level indicator
- 2. Maintain air vent
- 3. Maintain/repair fuel pump
- 4. Maintain fuel filter
- 5. Maintain/repair fuel tank
- 6. Maintain/repair /replace nozzle
- 7. Maintain/repair valves
- 8. Maintain/repair fuel pipe line

- 9. Maintain/repair burner
- 10. Maintain/repair water tank
- 11. Maintain fuel Steiner
- 12. Maintain/repair pressure gauge
- 13. Maintain/repair level switch/pipe/glass
- 14. Maintain/repair oil heater
- 15. Maintain/repair burner ignition transformer
- 16. Maintain/repair hooter
- 17. Maintain/repair inner jacket
- 18. Maintain/repair/replace V-belt
- 19. Maintain/repair air blower
- 20. Replace gland
- 21. Replace relay
- 22. Replace photo cell sensor
- 23. Replace pump bearing
- 24. Replace oil seal
- 25. Replace bulb indicator / switches