



GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP  
DIRECTORATE GENERAL OF TRAINING

**COMPETENCY BASED CURRICULUM**

# **FIREMAN**

(Duration: Six Months)

**CRAFTSMEN TRAINING SCHEME (CTS)**

**NSQF LEVEL- 3**



**SECTOR – SAFETY AND SECURITY**

# FIREMAN

(Non-Engineering Trade)



**CRAFTSMEN TRAINING SCHEME (CTS)**

**NSQF LEVEL - 3**

**Skill India**  
कौशल भारत - कुशल भारत

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

**CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE**

EN-81, Sector-V, Salt Lake City,  
Kolkata – 700 091

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<b>List of Expert Members participated/ contributed for finalizing the course curriculum of Fireman Trade on 29.06.2018 at Vadodara.</b>			
<b>S No.</b>	<b>Name &amp; Designation Sh/Mr./Ms.</b>	<b>Organization</b>	<b>Remarks</b>
1.	Mr. Deepankar Mallick, DDG (Training)	DGT, MSDE, New Delhi	Chairman
2.	Mr. L. K. Mukherjee, DDT	CSTARI, Kolkata	Coordinator
3.	Mr. Sharadchandra S. Choudhari, MD	HSE & Fire Risk Solution, Vadodara. Gujarat	Expert
4.	Mr. V C Bhatt, Additional General Manager	GNFC Ltd. Bharuch. Gujarat	Expert
5.	Mr. Vishnu B. Mishra, Chief F&S	GSFC, Vadodara	Expert
6.	Mr. Mukesh Joshi, Station Officer	Heavy Water Plant, Vadodara, Gujarat	Expert
7.	Mr. Satheeshkumar. V, Head – Fire	Reliance India Ltd	Expert
8.	Mr. Vivek Pathak, AGM- HSE	Gujarat State Petronet Ltd., Gandhinagar, Gujarat	Expert
9.	Mr. Rajesh D Wakodikar, AM – HSE	Gujarat State Petronet Ltd., Surat, Gujarat	Expert
10.	Mr. Hemant A Chodankar	Fire & Rescue Watch Manager, International Power Company, UAE	Expert
11.	Mr. Vishnupratap Singh, Fire Officer	GNFC Ltd, Bharuch, Gujarat	Expert
12.	Mr. S K Paul, Retd. Sr. Manager	Fire & Safety, KRIBCHO, Surat, Gujarat	Expert
13.	Mr. S A Pandav, Regional Dy. Director (Trg),	Regional Apprenticeship Advisor, Vadodara, Directorate of Employment & Training, Gujarat	Member
14.	Smt. N. K. Shah, Principal	ITI Gorwa, Vadodara	Member
15.	Mr. D. P. Gurjar, Sr. Instructor	ITI, Tarsali, Vadodara, Gujarat	Member
16.	Mr. G.S. Wankhede, Advisor	IFSDMS, Vadodara, Gujarat	Member

17.	Mr. Vikram Mahurkar, President	IFSDMS, Vadodara, Gujarat	Member
18.	Mr. J B Shetty, Technical Director	IFSDMS., Vadodara, Gujarat	Member
19.	Mr. P. P. Vaghela, Dy. Director	IFSDMS, Vadodara, Gujarat	Member
20.	Mr. K. S. Patel, Foreman	ITI, Tarsali, Vadodara, Gujarat	Member



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## 1. COURSE INFORMATION

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A fireman is the responder, who notices, recognizes risks and emergencies that are harmful to life, property and premises. Fireman is responsible for monitoring premises through physical presence and by following laid down procedures and use effective rescue and fire fighting techniques to save property and human lives.

The primary role of the Fireman is to rescue & mitigate emergency and control fire situations by using appropriate fire-fighting equipment and safety devices. The core responsibility is to extinguish fire, rescue of trapped personnel and respond to various manmade and natural emergencies.

The duration of the fireman trade is 6 months. During this six month period candidate is trained on professional skill trade knowledge and employability skill. In addition to this a candidate is entrusted to undertake project work, extracurricular activities and on the job field training is also conducted to aware on the real time emergency situation & build up confidence. The practical skills are imparted in simple to complex manner & simultaneously theory subject is taught in the same fashion to apply cognitive knowledge while executing task.

The practical fire fighting part starts with basics of fire safety, carry out first aid fire fighting, recognize and operate fire fighting systems, maintain and test tools and equipment, respond to fire and other hazards, carry out rescue and first aid, able to do risk assessment and maintain safety of self and others at the end of the course.

The broad components covered during one semester (six month) are as below:-

1. Fire Terminology
2. Safety and Protective equipment
3. Fire Discipline, Fire communication, IT, Fire administration, and office procedures.
4. Hazardous materials.
5. Stages of Fire, Classification of Fire, Basic Chemistry of Fire and Fire Behaviour.
6. Types of Fire suppression/ extinguishing media.
7. Fire Prevention and public education.
8. Self contained Breathing Apparatus (SCBA).
9. Types of Fire Streams.
10. Hose, Hydrant, nozzles – Drills and theory. Types of Fire Pumps and Fire Pump drills Types of Fire Extinguisher and Fire fighting equipment.
11. Ladders – Theory and drills.
12. Technical Rescue and Medical First responder.
13. Fire ground operations.
14. Practical application of Active and Passive Fire Protection and suppression systems

15. Confined Space – Standby duty, Rescue operations Fire Fighting and entry awareness.
16. Different types of work procedures in industries – Fire protection and standby during Hot work.
17. Inspection, Maintenance, Servicing and Hydrostatic testing of fire Extinguisher and Fire equipment.
18. Salvage and overhaul.

### 2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under the aegis of National Council of Vocational Training (NCVT). Craftsman Training Scheme (CTS) and Apprenticeship Training Scheme (ATS) are two pioneer programmes of NCVT for propagating vocational training.

Fireman trade under CTS is one of the newly designed courses. CTS courses are delivered nationwide through network of ITIs. The course is of six months (01 semester) duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Employability Skills) imparts requisite core skill, knowledge and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by NCVT which is recognized worldwide.

#### **Candidates need broadly to demonstrate that they are able to:**

- Read and interpret technical parameters/ documents, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to self safety and safety of people following various safety rules, accident prevention method , prevailing regulations and environmental protection stipulations;
- Apply professional skill, knowledge & employability skills while performing jobs.
- Document the technical parameters related to the task undertaken.

### 2.2 CAREER PROGRESSION PATHWAYS

- Can join Apprenticeship programme in different types of industries leading to National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.



## 2.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of six months (01 semester): -

S No.	Course Element	Notional Training Hours
1.	Professional Skill (Trade Practical)	660
2.	Professional Knowledge (Trade Theory)	132
3.	Employability Skills	55
4.	Library & Extra-curricular activity	33
5.	Project Work	80
6.	Revision & Examination	80
	<b>Total</b>	<b>1040</b>

## 2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of the course and at the end of the training program as notified by the Government of India (GoI) from time to time. The employability skills will be tested in the first two semesters itself.

a) The **Internal Assessment** during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the template (Annexure – II).

b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NTC will be conducted by NCVT at the end of each semester as per the guideline of Government of India. The pattern and marking structure is being notified by Govt. of India from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check** the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

### 2.4.1 PASS REGULATION

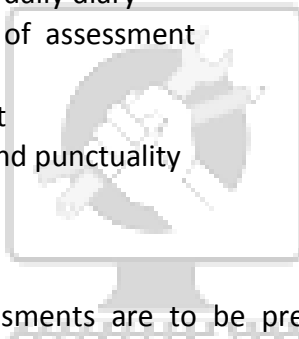
The minimum pass percentage for practical is 60% & minimum pass percentage of theory subjects is 40%.

## 2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

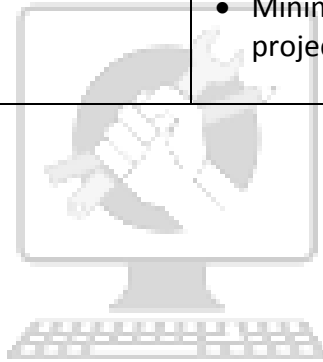
- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work



Evidences of internal assessments are to be preserved until forthcoming semester examination for audit and verification by examining body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
<b>(a) Weightage in the range of 60%-75% to be allotted during assessment</b>	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices	<ul style="list-style-type: none"> <li>• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment.</li> <li>• Below 70% tolerance dimension achieved while undertaking different work with those demanded by the component/job.</li> <li>• A fairly good level of neatness and consistency in the finish.</li> <li>• Occasional support in completing the project/job.</li> </ul>
<b>(b) Weightage in the range of 75%-90% to be allotted during assessment</b>	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices	<ul style="list-style-type: none"> <li>• Good skill levels in the use of hand tools, machine tools and workshop equipment.</li> <li>• 70-80% tolerance dimension achieved while undertaking different work with those demanded by the component/job.</li> </ul>

	<ul style="list-style-type: none"> <li>• A good level of neatness and consistency in the finish.</li> <li>• Little support in completing the project/job.</li> </ul>
<p>(c) Weightage in the range of more than 90% to be allotted during assessment</p>	
<p>For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.</p>	<ul style="list-style-type: none"> <li>• High skill levels in the use of hand tools, machine tools and workshop equipment.</li> <li>• Above 80% tolerance dimension achieved while undertaking different work with those demanded by the component/job.</li> <li>• A high level of neatness and consistency in the finish.</li> <li>• Minimal or no support in completing the project.</li> </ul>

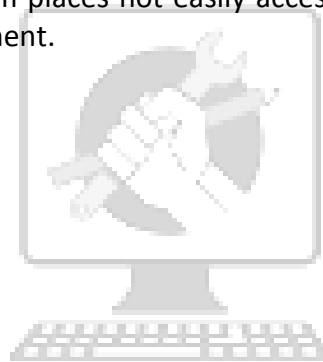


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**Fire Fighter;** Fireman (Fire Service), fights fires as member of firefighting force using firefighting equipment to extinguish fire, rescue people and property from fire and performs sentry duty. Visits scene of fire on motor vehicle equipped with firefighting material, water pumps etc. on receipt of fire information. Connects and mans hose to spray water or chemicals on fire, or uses portable fire extinguisher in places not accessible with hose. Demolishes parts of buildings or other structure as necessary, to clear passage and to prevent further spread of fire. Rescues trapped persons and administers artificial respiration to those overcome by heat or fire. Maintains firefighting equipment in perfect condition and performs sentry duty at fire station according to roster. May perform other services during emergencies or natural calamities such as flood, storm by rescuing people in danger, manning hoses to assist police to control rioters, extricating persons or animals from places not easily accessible etc. May drive fire truck. May undertake minor repairs to equipment.

**Reference NCO-2015:**

- (i) 5411.0100 - Fire Fighter



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## 4. GENERAL INFORMATION

<b>Name of the Trade</b>	<b>FIREMAN</b>
<b>NCO - 2015</b>	5411.0100
<b>NSQF Level</b>	Level - 3
<b>Duration of Craftsmen Training</b>	Six month (one semester)
<b>Entry Qualification</b>	<p>Passed class 10<sup>th</sup> Class Examination under 10+2 system of education with Mathematics and Sciences or its equivalent.</p> <p><b>The minimum physical requirements:</b></p> <ol style="list-style-type: none"> <li>i. Height - 165 cm</li> <li>ii. Weight - 52 kg</li> <li>iii. Chest - Normal 81 cm - Expanded 85 cm</li> <li>iv. A registered MBBS doctor must certify that the candidate is medically fit to undertake the course.</li> </ol>
<b>Unit Strength (No. of Student)</b>	20 (Max. supernumeraries seats: 6)
<b>Space Norms</b>	1000 Sq. m
<b>Power Norms</b>	2 KW
<b>Instructors Qualification for:</b>	
<b>(i) Fireman Trade</b>	<p>Degree in Fire &amp; Safety Engineering/Degree in Fire Science from recognized university with one year experience in the relevant field.</p> <p style="text-align: center;"><b>OR</b></p> <p>Advanced Post Graduate / Diploma in Industrial Safety Engineering/ Fire and Industrial Safety Engineering /Post Graduate Diploma in Health, Safety &amp; Environment from recognized board of education with two year experience in the relevant field.</p> <p style="text-align: center;"><b>OR</b></p> <p>Defense &amp; Para Military Forces Officer/ JCOs/NCOs with 10 years of experience in the relevant field.</p> <p style="text-align: center;"><b>OR</b></p> <p>National Examination Board Occupational Safety and Health (NEBOSH)/Occupational Safety and Health Administrator (OSHA) Certification-1 Yr Experience.</p> <p style="text-align: center;"><b>OR</b></p> <p>NTC/NAC passed in the trade of Fire Technology and Industrial Safety Management with 3 years experience in the relevant field.</p>

	<p><b>Desirable:</b> Preference will be given to a candidate with Craft Instructor Certificate (CIC).</p> <p><b>At least one instructor must have degree/diploma in relevant trade.</b></p>			
<b>(ii) Employability Skill</b>	<p>MBA OR BBA with two-year experience OR Graduate in Sociology/ Social Welfare/ Economics with two-year experience OR Graduate/ Diploma with two-year experience and trained in Employability Skills from DGT institutes.</p> <p style="text-align: center;"><b>AND</b></p> <p>Must have studied English/ Communication Skills and Basic Computer at 12<sup>th</sup>/ Diploma level and above.</p> <p style="text-align: center;"><b>OR</b></p> <p>Existing Social Studies Instructors duly trained in Employability Skills from DGT institutes.</p>			
<b>List of Tools and Equipment</b>	As per Annexure – I			
<b>Distribution of training on hourly basis: (Indicative only)</b>				
Total Hrs/ Week	Trade Practical	Trade Theory	Employability Skills	Extracurricular Activity
40 Hours	30 Hours	06 Hours	02 Hours	02 Hours

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## 5. NSQF LEVEL COMPLIANCE

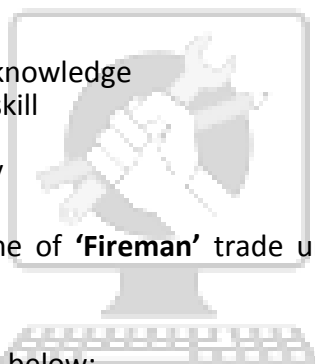
NSQF level for **'Fireman'** trade under CTS: **Level 3**

As per notification issued by Govt. of India dated- 27.12.2013 on National Skill Qualification Framework total 10 (Ten) Levels are defined.

Each level of the NSQF is associated with a set of descriptors made up of five outcome statements, which describe in general terms, the minimum knowledge, skills and attributes that a learner needs to acquire in order to be certified for that level.

Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

- a. Process
- b. professional knowledge
- c. professional skill
- d. core skill
- e. Responsibility



The Broad Learning outcome of **'Fireman'** trade under CTS mostly matches with the Level descriptor at Level- 3.

The NSQF level-3 descriptor is given below:

LEVEL	Process required	Professional knowledge	Professional skill	Core skill	Responsibility
Level 3	Person may carry out a job which may require limited range of activities routine and predictable	Basic facts, process and principle applied in of employment	Recall and demonstrate practical skill, routine and repetitive in narrow range of Application.	Communication written and oral, with minimum required clarity, skill of basic arithmetic and algebraic principles, personal banking, basic understanding of social and natural environment	Under close supervision. Some responsibility for own work within defined limit.

## 6. LEARNING/ ASSESSABLE OUTCOME

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*Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.*

### 6.1 GENERIC LEARNING OUTCOME

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Work in a team, understand and practice soft skills, technical English to communicate.
3. Explain personal finance, entrepreneurship and manage/ organise related task in day to day work personal and societal growth.
4. Exhibit the written & Communication skill and utilize basics computer application and internet to take benefit of IT development in the industry.
5. Read, Write and understand English and at least in one vernacular language.

### 6.2 SPECIFIC LEARNING OUTCOME

6. Identify different types of fire, select & perform various Hose drill.
7. Plan and perform fire fighting by using various types of fire extinguishers.
8. Establish the fire suppression criteria, compare & create various methods of fire extinguishment.
9. Identify water supply system, select and perform various Hydrant drill viz., 3 men, 4 men, etc.
10. Select & execute the functionality of ground ladder.
11. Identify, select and make use of various small gears.
12. Identify, Select and perform various pump drill.
13. Select and ensure the use of Personal Protective Equipment (PPE).
14. Classify various building construction structures and materials in relation to fire and life safety.



15. Identify the procedure for making mechanical foam and establish its effectiveness in extinguishing class B fire.
16. Define risk evaluation and control procedures. Identify the direct/ indirect loss, mitigation measures, use of salvage sheets and salvage equipment.
17. Execute technical rescue, use of rope, lines and various knots.
18. Perform first aid to casualty, give CPR and artificial respiration to the breathing arrest casualty.
19. Measure various capacities of water bodies & hydraulics in relation to water head, friction loss, velocity and water discharge.



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## 7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA

GENERIC LEARNING/ ASSESSABLE OUTCOME	
LEARNING / ASSESSABLE OUTCOME	ASSESSMENT CRITERIA
1. Recognize & comply safe working practices, environment regulation and housekeeping	1.1 Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements and according to policy.
	1.2 Recognize and report all unsafe situations according to policy.
	1.3 Identify and take necessary precautions on fire and safety hazards and report according to work policy and procedures.
	1.4 Identify, handle and store / dispose-off dangerous goods and substances according to policy and procedures following safety regulations and requirements.
	1.5 Identify and observe policies and procedures in regard to illness or accident.
	1.6 Identify safety alarms accurately.
	1.7 Report supervisor/ Competent authority in the event of accident or sickness of any staff and record accident details correctly according to accident/injury procedures.
	1.8 Identify and observe evacuation procedures according to site policy.
	1.9 Identify Personal Productive Equipment (PPE) and use the same as per related working environment.
	1.10 Identify basic first aid and use them under different circumstances.
	1.11 Identify different fire extinguisher and use the same as per requirement.
2. Work in a team, understand and practice soft skills, technical English to communicate	2.1 Obtain sources of information and recognize information.
	2.2 Use documents, regulations and occupationally related provisions.
	2.3 Conduct appropriate and target oriented discussions with higher authority and within the team.
	2.4 Present facts and circumstances, possible solutions & use English and French terminology.
	2.5 Resolve disputes within the team.
	2.6 Conduct written communication.
3. Explain Personal Finance,	3.1 Explain personnel finance and entrepreneurship.

Entrepreneurship and manage/organise related tasks in day to day work personal and societal growth	3.2 Explain role of various schemes and institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non-financing support agencies to familiarize with the Policies/Programmes & procedure & the available scheme.
	3.3 Prepare Project report to become an entrepreneur for submission to financial institutions.
4. Exhibit the written & Communication skill and utilize basic computer applications and internet to take benefit of IT developments in the industry.	4.1 Ascertain the maintenance of various documents
	4.2 Explain the call receiving method
	4.3 Brief documentation of Occurrence book, Log book, Attendance register, Leave register, hose cards etc.
	4.4 Explain the method of fire call reporting
	4.5 Internal examination to test knowledge on basic computer
	4.6 Working, basic operating system and uses internet services.
	4.7 Their applications will be assessed during execution of assessable outcome.
5. Read, Write and understand English and at least in one vernacular language.	5.1 Read and understand simple sentences about self, work and environment.
	5.2 Construct simple sentence in English.
	5.3 Greet over Phone and Take messages.

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SPECIFIC LEARNING/ ASSESSABLE OUTCOME	
LEARNING/ ASSESSABLE OUTCOME	ASSESSMENT CRITERIA
6. Identify different types of fire, select & perform various Hose drill.	6.1 Select the types of suction and delivery hose.
	6.2 Identify the Causes of hose decay & its prevention
	6.3 Perform Use of percolating & non-percolating hose
	6.4 Identify hose reel, causes of decay and its care & maintenance.
	6.5 Identify Importance of hose reel hose in first aid fire fighting in buildings and industries.
	6.6 Plan of work in compliance with standard tests of delivery hoses.
	6.7 Perform Standard test of Suction hose
	6.8 Identify the different groups of hose fittings and their uses.
	6.9 Measure of deep lift suction fittings.
	6.10 Type of Breaching and its uses.
	6.11 Identify the hose ramps, care and maintenance of hose fittings.
	6.12 Describe basic science and physics related to combustion
	6.13 Describe Basic property of matter, types of matter & effect of the heat on matter.
	6.14 Define Vapour density, Relative density effect of density on the behaviour of gases.
	6.15 Define Melting & boiling point
	6.16 Describe heat and its effect on matter, measurement Units of temperature and interchange.
	6.17 Identify Flammable liquids, gases, & vapours specific heat, latent heat.
	6.18 Define combustion, fire triangle, Fire tetra hadrons.
	6.19 Knowledge of various types of chemicals in the trade.
	6.20 Identify the type of chemicals and their hazard in the place.
	6.21 Select the suitable chemicals on the workplace.
	6.22 Analyzed the effect of chemicals on the suitable jobs
7. Plan and perform fire fighting by using various types of fire extinguishers.	7.1 Classify the types of fire and suitability of fire extinguisher on particular class of fire.
	7.2 Install the wall fitting and test it.
	7.3 Technique of fire extinction Smothering Cooling and Starvation.
	7.4 Observe the halon and its detrimental effect on Environment.
	7.5 Observe the safety/precaution during the operation of
	7.6 Extinguisher.
	7.7 Store pressure type and Cartridge type fire extinguishers

	7.8 Working principle of DCP, CO <sub>2</sub> , Mechanical Foam and Water type fire extinguishers.
8. Establish the fire suppression criteria, compare & create various methods of fire extinguishment.	<p>8.1 Ascertain the fire prevention measures and its importance in preventing fires</p> <p>8.2 Identify and ascertain the trade tools practice their uses with prevention jobs, care &amp; maintenance</p> <p>8.3 Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.</p> <p>8.4 Identify trade equipment and their uses.</p> <p>8.5 Classify the types and method of operation of Fire Extinguishers.</p> <p>8.6 Operate of the fire extinguisher as following PASS method.</p> <p>8.7 Identify the suitability of fire extinguishers</p> <p>8.8 Carry out care &amp; maintenance of fire extinguishers</p> <p>8.9 Carry out care &amp; maintenance of all Fixed Fire Fighting Installations.</p> <p>8.10 Observe general safety precaution and occupational Health and hygiene.</p> <p>8.11 Identify the hazards other than fire in the work place.</p> <p>8.12 Know the ERP of the work place.</p> <p>8.13 Brief the reporting system within organization &amp; work place</p> <p>8.14 Ensure emergency Exit routes</p> <p>8.15 Know the procedure of control, containment and confinement procedures.</p> <p>8.16 Classify the water based and non-water based fixed fire fighting systems.</p> <p>8.17 Classify the Types of water sprinkler systems, fusible link sprinkler, Quartzoid bulb sprinkler, drenchers etc.</p>
9. Identify water supply system, select and perform various Hydrant drill viz., 3 men, 4 men, etc.	<p>9.1 Identify Water main, Risers, Down comer</p> <p>9.2 Identify the functional application of Deluge valve system.</p> <p>9.3 Describe the fixed Foam Installations.</p> <p>9.4 Identify the importance of Foam pourer in tank protection</p> <p>9.5 Identify the main water discharging sources, Hydrants, Monitors, HVWS, MVWS, HVLR</p> <p>9.6 Describe the total flooding system I.e. CO<sub>2</sub>, FM-200.</p>
10. Select & execute the functionality of ground ladder.	<p>10.1 Describe the ladder used in fire services</p> <p>10.2 Brief the method of Pitching, ascending and descending the ladder.</p> <p>10.3 Perform leg lock and arm hold</p> <p>10.4 Perform the standard test of the strings, rounds and extending</p>

	line.
11. Identify, select and make use of various small gears.	11.1 Classification of small gears
	11.2 Select and use various cutting and breaking tools.
	11.3 Select special types of small gears
	11.4 Perform testing and care and maintenance of small gears.
12. Identify, Select and perform various pump drill.	12.1 Classify the common type of pumps.
	12.2 Methods of priming.
	12.3 Select and testing fault finding.
	12.4 Introduction to centrifugal pump.
	12.5 Observe care maintenance and testing criteria of pump.
13. Select and ensure the use of Personal Protective Equipment (PPE).	13.1 Assign the personal protection equipment, their proper selection and their uses.
	13.2 Prepare care & maintenance respiratory and non respiratory Personal protective equipment.
	13.3 Explain the head protection, ear protection, Face & eye protection, hand protection, Foot protection& Body protection.
	13.4 Explain various types of respiratory PPE, types of breathing apparatus, SCBA- function of all parts, uses and donning & doffing of SCBA.
14. Classify various building construction structures and materials in relation to life safety.	14.1 Classification of buildings as per NBC
	14.2 Execute building materials & their behaviour under fire conditions.
	14.3 Knowledge of various types of occupancies and fire load, fire fighting techniques.
	14.4 Classification and Zoning of Building according their Fire Load
	14.5 Create of importance of fire escapes with respect to their Positioning
	14.6 Nos. of fire escape, escape routes and travelling distance
	14.7 Pressurization and illumination in escape route
	14.8 Arrange the reference to NBC part IV fire construction and provisioning of passive fire fighting technique.
15. Identify the procedure for making mechanical foam and establish its effectiveness in extinguishing class B fire	15.1 Classify the types of foam concentrates.
	15.2 Prepare & test foam making equipment-(mechanical foam).
	15.3 Knowledge of high expansion and low expansion foam.
	15.4 Special uses of Medium & High expansion foam
	15.5 Plan & prepare storage of foam compound.
	15.6 Preservation of Foam Concentrations.
	15.7 Type & Application of dry chemical powder.

	15.8 Identify the compatibility of Dry Powder with foam
	15.9 Know the application ratio of foam
	15.10 Calculate the requirement of total foam compound and water.
16. Define risk evaluation and control procedures. Identify the direct/indirect loss, mitigation measures, use of salvage sheets and salvage equipment.	16.1 Explain the direct and indirect loss due to fire incidents
	16.2 Execute the mitigation measures for indirect loss.
	16.3 Use of various Salvage sheets
	16.4 Ascertain the care; maintenance and testing of salvage equipment.
	16.5 Knowledge of occupational health hazards & dangerous properties of chemicals.
	16.6 Analyzed the Dust Gases, Fumes, Mist, Vapours, Smoke and Aerosols.
	16.7 Concepts of threshold limit value.
	16.8 Classify Hazards.
17. Execute technical rescue, use of rope, lines and various knots.	17.1 Establish the risk assessment techniques
	17.2 Describe Ropes & Lines.
	17.3 Identify the knots and hitches.
	17.4 Ascertain the testing of different types of lines.
	17.5 Familiarization and practice with various rescue knots.
	17.6 Prevent deterioration and damage to ropes & lines.
	17.7 Perform rescue casualty from various situations, water rescue, rescue from height, rescue from rift, rescue from sewer, rescue from lift, rescue from well and animal rescue
	17.8 Identify the various tools and equipment use for rescue
18. Perform first aid to casualty, give CPR and artificial respiration to the breathing arrest casualty	18.1 Take the casualty in to the safe environment
	18.2 Check properly and render first aid accordingly
	18.3 Execute CPR if casualty found cardiac arrest
	18.4 Execute artificial respiration in case of breathing arrest
19. Measure various capacities of water bodies and hydraulics in relation to water head, friction loss, velocity and water discharge.	19.1 Apply Method of carrying stretcher with casualty.
	19.2 Select and apply the method of hydraulic test for fire extinguisher and SCBA set.
	19.3 Identify the Method of standard test of ladder and small gears
	19.4 Calculate capacity of tanks of given shapes and sizes.

SYLLABUS - FIREMAN			
FIRST SEMESTER – 06 Months			
Week No.	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)
1	Recognize & comply safe working practices, environment regulation and housekeeping.	<ol style="list-style-type: none"> <li>1. Familiarization with the institute, Documentation of student, issuance of Dress, Books, Hostel Accommodation (if required) and Store. (04 hrs)</li> <li>2. Importance of trade training, equipment used in the trade, types of work done by the trainees in the trade. (06 hrs)</li> <li>3. Introduction to safety equipment and their uses. (06 hrs)</li> <li>4. Introduction of First Aid, Road safety, operation of electrical mains. (06 hrs)</li> <li>5. Associated Safety Hazards &amp; risk, Occupational Health Hazards and associated environment related issue. (08 hrs)</li> </ol>	<p>All necessary guidance to be provided to the new comers to become familiar with the topography &amp; working of Industrial Training Institute system including stores procedures.</p> <p>Discipline: Introduction, General principles of discipline, essentials for discipline and outward signs.</p>
2	Identify different types of fire, select & perform various Hose drill.	<ol style="list-style-type: none"> <li>6. Physical Exercise &amp; Squad drill (10 hrs) Hose Drill</li> <li>7. Lifting the hose by number (05 hrs)</li> <li>8. Lowering the hose by number (05 hrs)</li> <li>9. Demonstration of the properties of various               <ul style="list-style-type: none"> <li>➤ Acids</li> <li>➤ Alkalies</li> <li>➤ Gases</li> <li>➤ Organic flammable liquids and commonly used industrial chemical</li> </ul> </li> </ol>	<p>Basics of Physics &amp; Chemistry related to Fire Physical properties of matter, Definition of Density, Relative density, Effects of density on behaviour of gases, Vapour Density, Melting &amp; Boiling point, introduction to Heat and Combustion, Measurement of temp and conversion of their scales, definition of Flammable liquids, Gases &amp; vapours, specific heat, latent heat.</p>



		(10 hrs)	
3	-do-	<p>10. Physical Exercise &amp; Squad drill. (10 hrs)</p> <p><b>Hose Drill</b></p> <p>11. Laying out the hose (05 hrs)</p> <p>12. Under running the hose (2.5 hrs)</p> <p>13. Recoiling the hose (2.5 hrs)</p> <p>14. Demonstration of the properties of various</p> <ul style="list-style-type: none"> <li>➤ Acids</li> <li>➤ Alkalies</li> <li>➤ Gases</li> <li>➤ Organic flammable liquids and commonly used industrial chemical</li> </ul> <p>(10 hrs.)</p>	<p>Anatomy of Fire: Definition of Combustion, Elements of Combustion, Products of combustion. Fire triangle and fire tetra hadrons, Flash point, Fire point, Ignition Temperature, spontaneous combustion. Flammability Range. Transfer of heat. Measurement of heat and conversion of heat measuring units.</p>
4	<p>Plan and perform fire fighting by using various types of fire extinguishers.</p> <p>Establish the fire suppression criteria, compare and create various methods of fire extinguishment.</p>	<p>15. Physical Exercise &amp; Squad drill (10 hrs)</p> <p><b>Fire Extinguisher drill</b></p> <p>16. Method of Lifting the extinguisher (05 hrs)</p> <p>17. Method of operation of extinguishers (15 hrs)</p>	<p>Classification of Fires: Classification of fire and types of extinguisher, maintenance, method of operation. Techniques of fire extinction-Smothering, Cooling and Starvation. Care and maintenance of Fire Extinguishers.</p> <p>Introduction to Class K Fire</p>
5	-do-	<p>18. Physical Exercise &amp; Squad drill (10 hrs)</p> <p><b>Extinguisher drill</b></p> <p>19. Method of Lifting the extinguisher (05 hrs)</p> <p>20. Method of operation of extinguisher (07 hrs)</p> <p>21. Method of refilling of extinguisher (08 hrs)</p>	<p>Hose and Hose Fittings: Type of suction &amp; Delivery Hoses, Material used in Construction. Hose-reel, and causes of decay, operational use of Hose, Storage, Care &amp; Maintenance, Repairing and Binding of Hose, Coupling and collecting head adapters, nozzles and other miscellaneous tools and equipment.</p>
6	Identify water supply system, select and perform various Hydrant	<p>22. Physical Exercise &amp; Squad drill (10 hrs)</p> <p><b>Hydrant drill</b></p> <p>23. Method of hose connection</p>	<p>Source of water supply: Construction, Capacity and use, Open source - Ponds, Rivers, Streams, Sea, hydrant types &amp;</p>

	drill viz., 3 men, 4 men, etc.	(05 hrs) 24. Method of handling the hose (07 hrs) 25. Method of under running and recoiling the hose (08 hrs)	uses. Over Head Tanks Capacity and use. Water Relay:- Types of relay-system, water distribution system. Advantages and disadvantages, calculation of hose.
7	-do-	26. Physical Exercise & Squad drill (10 hrs) <b>Hydrant drill</b> 27. Method of hose connection (05 hrs) 28. Method of handling the hose (07 hrs) 29. Method of under running and recoiling the hose (08 hrs)	Ladders: Introduction of Types of ladders, Extension Ladder, Hook Ladder, Use, Care and maintenance of ladders. Pitching of Ladders parts and components
8	Select & execute the functionality of ground ladder.  Identify, select and make use of various small gears.	30. Physical Exercise & Squad drill (10 hrs) <b>Ladder drill</b> 31. Close up to the ladder (05 hrs) 32. Method of carrying the ladder (07 hrs) 33. Method of pitching the ladder (08 hrs)	Small & Special Rescue Gears: Different types of small gears, Fireman Axe, Ceiling Hook, Crowbar, Door Breaker, Padlock equipment and different type of Saw used during fire fighting & rescue techniques. Care, maintenance & testing of small gears.
9	-do-	34. Physical Exercise & Squad drill. (10 hrs) <b>Ladder drill</b> 35. Method of carrying the ladder. (05 hrs) 36. Method of pitching the ladder (07 hrs) 37. Method of ascending and descending the ladder. (08 hrs)	Breathing Apparatus set: Introduction of BA Set, Types of BA Sets in use, Components and function/ working principles of normal compressed air BA set and its station maintenance.
10	-do-	38. Physical Exercise & Squad drill (10 hrs) <b>Ladder drill</b> 39. Method of pitching the ladder (05 hrs) 40. Method of ascending and descending the ladder with application of leg lock and arm hold. (07 hrs) <b>Practice of rescue knots</b>	Rope and Knots: Construction and fiber used for Ropes, types and use of Lines, causes of deterioration, inspection and test, methods of testing, care and maintenance, standard knots and their uses.

		41. Practice of tying rescue knots (08 hrs)	
11	Identify, Select and perform various pump drill.  Select and execute the use of Personal Protective Equipment (PPE).  Classify various building construction structures and materials in relation to fire and life safety.	42. Physical Exercise & Squad drill. (10 hrs) <b>Pump drill</b> 43. Close up the pump (05 hrs) 44. Falling three paces behind the pump. (08 hrs) 45. Practice of equipment hauling & lowering knots. (07 hrs)	Building Construction: Building Materials and their behaviour under fire conditions, signs of building collapse and rescue operation, importance of fire escapes with respect their positioning for construction and provisioning of fire fighting measures. AS per NBC.  Personal Protective Equipment:- (PPE):-- Need for Personal Protective Equipment, Selection, Use, Care & Maintenance, Respiratory and Non-respiratory PPEs.
12	-do-	46. Physical Exercise & Squad drill. (10 hrs) <b>Pump drill</b> 47. Method of connecting suction hose (05 hrs) 48. Method of laying out two line, three length each. (05 hrs) 49. Method of priming and operation of pump. (10 hrs)	Pump and Primers: Classification of common pumps in use in Fire Service and its types , centrifugal pump, its parts, construction & their function, different types of primers, Reciprocating and Gas Ejector primers, Care and Maintenance, introduction to Cooling System & its importance.
13	-do-	50. Physical Exercise & Squad drill. (10 hrs) <b>Pump drill</b> 51. Method of connecting suction hose. (05 hrs) 52. Method of laying out two line, three length each. (07hrs) 53. Method of priming and operation of pump. (08 hrs)	Fixed Fire Fighting Installations: A. Water Based- Riser mains- Wet Riser, Dry Riser, Hose reel installation, use and maintenance, introduction to hydrants, monitors, B. Non-water based- Foam based, Foam pourer, DCP, CO2, based installations use and maintenance.
14	Identify the procedure for making mechanical foam and establish its effectiveness in extinguishing class	54. Physical Exercise & Squad drill (10 hrs) <b>Foam Drill</b> 55. Performing foam drill using Knap shank tank and FB2 (06 hrs)	Electricity & fire Hazards: General introduction, Fundamentals of electricity, Common Causes of electrical fires and its remedial measures, Electrical Hazards, protective measures and fire

	B fire.	56. Performing foam drill using inline inductor (07 hrs) 57. Performing foam drill using mechanical foam generator (07 hrs)	fighting procedure.  Foam & Foam making equipment: Water as an extinguishant- its merit-demerits and modification. Introduction to all types of foam concentration, properties of foams and techniques of extinguishment, types of foam, characteristics of good foam, foam making equipment- Mechanical High expansion, medium expansion and Low expansion foam, Storage of foam compound.
15	-do-	58. Physical Exercise & Squad drill (10 hrs) <b>Foam drill</b> 59. Performing foam drill using medium expansion foam generator (06 hrs) 60. Performing foam drill using variable inductors (07 hrs) 61. Performing foam drill using round the pump proportioner (07 hrs)	Fire Fighting Appliances: Special features of water tender and special types of fire tenders(Foam tender, DCP Tender, CO2 tender, Multipurpose tender) Introduction of Portable fire pump, capacity, use and maintenance. Fire tenders, types use and maintenance. Foam Tender- General requirements, use, Operation, maintenance and test special Appliances. (TTL,HEP,RIV,Rescue van)
16	Define risk evaluation and control procedures. Identify the direct/ indirect loss, mitigation measures, use of salvage sheets and salvage equipment.	62.Physical Exercise & Squad drill. (10 hrs) <b>B A Set drill</b> 63.Identification of Self Contained Breathing apparatus (SCBA) set. (10 hrs) 64.Donning & doffing SCBA. (10 hrs)	Practical Fireman ship: Duties & responsibilities of fire crew at a fire station & Fire Ground Methods of entry, Rescue & fire fighting in smoke logged building.  Salvage work- Direct/ indirect loss, Mitigation measures, Salvage seats and other special equipment.  Application of various types of fire fighting methods. (Defensive, Offensive).
17	Execute technical	65.Physical Exercise & Squad drill	Special Services Calls:

	rescue, use of rope, lines and various knots.	(10 hrs) <b>B A Set drill</b> 66. Donning & doffing. (05 hrs) 67. Performing low pressure & high pressure pre-entry test. (07 hrs) 68. Performing care, maintenance and testing of SCBA and its components. (08 hrs)	Introduction, Methods employed by fire service to rescue trapped persons in lifts, sewer, trapped under vehicle, Debris of collapsed building and Wells, Rescue of human being animals from pounds & Rivers.
18	Perform first aid to casualty, give CPR and artificial respiration to the breathing arrest casualty.	69. Physical Exercise & Squad drill (10 hrs) <b>Rescue Procedures</b> 70. Method of rescue casualty without equipment a- Carry casualty. (05 hrs) b- Dragging casualty. (05 hrs)  <b>Practice of CPR</b> 71. Performing cardiac pulmonary resuscitation. (10 hrs)	Medical First Aid: Definition of first-aid, Quality of First Aider, Shock-sign and symptoms, Asphyxia Sign and symptoms, Wound and Hemorrhage - Classification of injuries, signs, symptoms and management of Burn, its severity, Scalds and frost bites, signs and symptoms of management of heart attack. Fractures - Causes, types, Signs and symptoms, management, sprain and dislocation - Sign & symptoms management & observation of patient, Snake Bites- treatment & management, resuscitation - different methods.
19	-do-	72. Physical Exercise & Squad drill (10 hrs) <b>Rescue Procedures</b> 73. Practice of Holger Neilson method (05 hrs ) 74. Practice of Shepherd method (05 hrs) 75. Practice Sylvester method (05 hrs) 76. Practice mouth to mouth and mouth to nose method (05 hrs)	Fire Service Organization: Introduction of Fire Service Organization, Writing and importance of occurrence book. Duty Card/ Register, fire reports, Log books, Hose Book, Stock Registers, Leave Register, Workshop order book, Defaulter Register etc.  Station discipline and watch room Control room procedure.  Executive duties of fireman.
20	-do-	77. Physical Exercise & Squad drill (10 hrs) 78. Writing practices of Occurrence Book, Duty Card/ Register, Log Book, Hose	Familiarization and demonstration of smoke detectors, Heat Detectors Gas Detectors.

		Book, Stock Register. (20 hrs)	Hazardous Chemicals: Dangerous chemicals and substances, Introduction to transportation & handling of dangerous chemicals & explosives, storage of hazardous chemicals and Fire Safety & fire fighting.
21	Define risk evaluation and control procedures. Identify the direct/ indirect loss, mitigation measures, use of salvage sheets and salvage equipment.	79. Physical Exercise & Squad drill. (10 hrs) <b>Salvage drill</b> 80. Method of using salvage sheet and special equipment (08 hrs) 81. Resuscitation method of artificial respiration using stretchers (12hrs)	Rural Fires: Fire Hazards in grasslands, Forest areas, rural areas and hay stacks. Causes of fire Special appliances and equipment used. Methods of fire fighting in rural area.
22	Measure various capacities of water bodies & hydraulics in relation to water head, friction loss, velocity and water discharge.	82. Physical Exercise & Squad drill. (10 hrs) <b>Stretcher drill – Using Neil Robertson Stretcher</b> 83. Method of carrying stretcher with casualty. (05 hrs) <b>Standard test</b> 84. Method of hydraulic test for fire extinguisher and SCBA set. (07 hrs) 85. 86. Method of standard test of ladder and small gears. (08 hrs)	Hydraulics: introduction & Units of measuring Length, Area and Volume of regular and irregular shaped Pressure & their conversion, Principal Characteristics of pressure and pressure head. Calculation of capacity of tanks of different shapes and sizes.
23-24	<b>Project work/ Industrial visit</b>		
25	<b>Revision</b>		
26	<b>Examination</b>		

**Note: -**

- (i) Physical training and squad drill at the starting of everyday shall be incorporated for one hour in each day to develop physical fitness, mental alertness and discipline among the trainees.
- (ii) Guest faculty (Expert in particular field like air craft fire, Ship Fire, First Aid, Fire station/ service related etc) may be provided.
- (iii) Expert may be engaged in examination.

### 9.1 CORE SKILL – EMPLOYABILITY SKILL

Duration: 55 Hours

CORE SKILL – EMPLOYABILITY SKILL	
<b>1. English Literacy</b>	
<b>Duration: 10 Hrs.</b>	
<b>Marks : 09</b>	
Pronunciation	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
Functional Grammar	Transformation of sentences, Voice change, Change of tense, Spellings.
Reading	Reading and understanding simple sentences about self, work and environment
Writing	Construction of simple sentences Writing simple English
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
<b>2. IT Literacy</b>	
<b>Duration: 10 Hrs.</b>	
<b>Marks : 09</b>	
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Computer Operating System	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
Word processing and Worksheet	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.

Computer Networking and Internet	Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cyber crimes.
<b>3. Communication Skills</b>	
	<b>Duration: 08 Hrs.</b> <b>Marks : 07</b>
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, non verbal, written, email, talking on phone. Non verbal communication -characteristics, components-Para-language Body language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.
Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquette, Dress code for an interview Do's & Don't for an interview.
Behavioral Skills	Problem Solving Confidence Building Attitude
<b>4. Entrepreneurship Skills</b>	
	<b>Duration: 07 Hrs.</b> <b>Marks : 06</b>
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation



	to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.
Project Preparation & Marketing analysis	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of PLC, Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.
Institutions Support	Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
Investment Procurement	Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.
<b>5. Productivity</b>	
	<b>Duration : 05 Hrs. Marks : 05</b>
Benefits	Personal / Workman - Incentive, Production linked Bonus, Improvement in living standard.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
Comparison with developed countries	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
<b>6. Occupational Safety, Health and Environment Education</b>	
	<b>Duration: 05 Hrs. Marks : 06</b>
Safety & Health	Introduction to Occupational Safety and Health importance of safety and health at workplace.
Occupational Hazards	Basic Hazards, Chemical Hazards, Vibroacoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
Accident & safety	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
First Aid	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.

Basic Provisions	Idea of basic provision legislation of India. safety, health, welfare under legislative of India.
Ecosystem	Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.
Pollution	Pollution and pollutants including liquid, gaseous, solid and hazardous waste.
Energy Conservation	Conservation of Energy, re-use and recycle.
Global warming	Global warming, climate change and Ozone layer depletion.
Ground Water	Hydrological cycle, ground and surface water, Conservation and Harvesting of water.
Environment	Right attitude towards environment, Maintenance of in -house environment.
<b>7. Labour Welfare Legislation</b>	
<b>Duration: 05 Hrs.</b> <b>Marks : 03</b>	
Welfare Acts	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.
<b>8. Quality Tools</b>	
<b>Duration: 05 Hrs.</b> <b>Marks : 05</b>	
Quality Consciousness	Meaning of quality, Quality characteristic.
Quality Circles	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.
Quality Management System	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
House Keeping	Purpose of House-keeping, Practice of good Housekeeping.
Quality Tools	Basic quality tools with a few examples.

LIST OF TOOLS & EQUIPMENT			
FIREMAN (for Batch of 20 Candidates)			
S No.	Name of the Tools and Equipment	Specification	Quantity
<b>A. SHOP TOOLS, INSTRUMENTS</b>			
<b>Lists of Tools:</b>			
1.	Water CO <sub>2</sub> Type Fire Extinguisher	9 Ltrs. Cap.	06 Nos.
2.	Stored pressure Type Fire Extinguisher	9 Ltrs. Cap.	06 Nos.
3.	Mechanical Foam type Fire Extinguisher	9 Ltrs. Cap.	06 Nos.
4.	CO <sub>2</sub> Type Fire Extinguisher	4.5 kg	06 Nos.
5.	BC Type Fire Extinguisher	5/10 Kg	04 Nos.
6.	ABC Type Fire Extinguisher	5/10 Kg	04 Nos.
7.	Extension Ladder *	Size-45/35 ft	02 Nos.
8.	All types of Branches or Nozzles *		04 Nos.
9.	Fire Hose *		
	a) 15m	63mm,	10 Nos.
	b) 30m	63mm	04 Nos.
10.	First Aid Box		01 No.
11.	All Types of small gears *		One each
12.	BA Set (Negative & Positive Pressure) *		02 Nos.
13.	a) Gas Cylinders *	300 bars,200 bars	02 Nos.
	b) Steel Back Plates *	300 bars	02 Nos.
	c) Face Masks *		02 Nos.
14.	Portable Fire Pump/TFP *	1800 LPM	02 Nos.
15.	All types of couplings *	63mm & 38 mm	01 Set
16.	Hydrant-Stand Pipe Type *	63 mm	02 Nos.
17.	Fire Trays	3X2 mtrs.	02 Nos.
18.	Manual call point *		01 No.
19.	Entry Suit/ Proximity Suit	3 Layers Nomex Proximity suit	02 Nos.
20.	Hose reel system *	30 mtrs.	01 No.
21.	Nitrogen Cylinder *	11 kg.	01 No.
22.	Hose Box *	Single/Double door	01 No.
23.	Fire Fighting Point complete Set *	1 set	01 No.

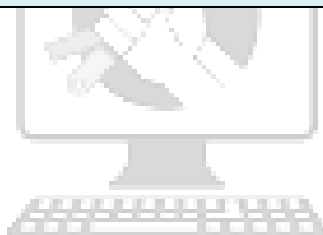
24.	Suction Hose 10 ft *	100 mm	02 Nos.
25.	Suction Wrench *	Universal	02 Nos.
26.	Metal Strainer		02 Nos.
27.	Basket Strainer		01 No.
28.	Ropes 100 ft Long *	2"	01 No.
29.	Lines 100 ft Long *	2"	01 No.
30.	Control Panel – Model-Pump	1800 lpm Portable	01 No.
31.	Personal Protective Equipment		
	a) Helmet (Type A,B,C)		20 Nos.
	b) Laser Welding Safety Goggles		10 Nos.
	c) Face Shield		10 Nos.
	d) Welding Shield		10 Nos.
	e) Ear Muff		10 Nos.
	f) Ear Plug		10 Nos.
	g) Canal Caps		10 Nos.
	h) Safety Shoes		20 Nos.
	i) Asbestos Gloves		10 Nos.
	j) Electrical Hand Gloves		10 Nos.
	k) Hand Gloves (Rubber)		10 Nos.
	l) Dust Mask		10 Nos.
32.	<b>Personal Protective Clothing for men</b>		
	a) Safety Shirt	F R base	10 Nos.
	b) Safety Trouser	F R base	10 Nos.
	c) Safety Jacket	Luminous	10 Nos.
	d) Cooling Vest		10 Nos.
	e) Gum Boots		10 Nos.
<b>List of Equipment</b>			
33.	Personal Fall Arrest System (PFAS)	3 mtrs.	02 Nos.
34.	Tripod	With hinge and sling	02 Nos.
35.	Pulley	4"	02 Nos.
36.	Suspended Scaffold		02 Nos.
37.	Gas Detector	Manual	02 Nos.
38.	Plastic Tunnel (Sewer Rescue Drill)		04 Nos.
39.	Body Harness	Full body	01 No.
40.	Collecting Breeching	63 mm	02 Nos.
41.	Dividing Breeching (Hand control)	63 mm	02 Nos.
42.	Hydrant Flange	63 mm	02 Nos.
43.	Hydrant Key & Bar (With hydrant Spindle)		01 No.
44.	Adopter for Air Store Pressure		02 Nos.

45.	Hydraulic Pressure Testing Machine		01 No.
46.	Sprinklers Head	(Bulb Type, Fusible Type)	02 Nos.
47.	Safety Belt		01 No.
48.	Computer System		06 Nos.
49.	Computer Table		06 Nos.
50.	Computers Chairs		06 Nos.
51.	White Board		01 No.
52.	L.C.D. Projectors		02 Nos.
53.	UPS 650 VA offline		06 Nos.
54.	All types of Detectors 1 Pes. of each		04 Nos.
55.	Flux meter		06 Nos.
56.	Dosi meter		01 No.
57.	Cut model of Fire Extinguisher / Fire pump *		02 Nos.
58.	Fire Suit		02 Nos.
59.	Fire Tender ( one For the Institute) *		01 No.
60.	Rescue Van ( one For the Institute) *		01 No.
61.	Foam Making equipment i. Foam making Branches ii. Inline Inductor iii. MFG-5 iv. MFG-10 v. Medium/High EX. Generator	FB-2, FB -10	01 Each
62.	Salvage equipment		01 Each
<b>B. Shop Floor Furniture and Materials - For 2 (1+1) units no additional items are required.</b>			
63.	Instructor's table		01 No.
64.	Instructor's chair		02 Nos.
65.	Metal Rack	100cm x 150cm x 45cm	04 Nos.
66.	Lockers with 16 drawers standard size		02 Nos.
67.	Steel Almirah	2.5 m x 1.20 m x 0.5 m	02 Nos.
68.	Black board/white board		01 No.
69.	Fire Extinguisher		02 Nos.
70.	Fire Buckets		02 Nos.

**\*Note:** In the above list of tools and equipments, the items bearing star mark are meant to be used for two courses viz. 'Fire Technology & Industrial Safety Management' and 'Health Safety & Environment'. If an institute is running all above mentioned trades, items bearing star mark are not required to be purchased separately.

TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software.	10 Nos.
2.	UPS - 500VA	10 Nos.
3.	Scanner cum Printer	01 No.
4.	Computer Tables	10 Nos.
5.	Computer Chairs	20 Nos.
6.	LCD Projector	01 No.
7.	White Board 1200mm x 900mm	01 No.

**Note:** Above Tools & Equipment not required, if Computer LAB is available in the institute.



**Skill India**  
कौशल भारत - कुशल भारत

FORMAT FOR INTERNAL ASSESSMENT

Name & Address of the Assessor:						Year of Enrollment:								
Name & Address of ITI (Govt./Pvt.):						Date of Assessment:								
Name & Address of the Industry:						Assessment location: Industry/ ITI								
Trade Name:			Semester:			Duration of the Trade/course:								
Learning Outcome:														
S No.	Maximum Marks (Total 100 Marks)		15	5	10	5	10	10	5	10	15	15	Total Internal Assessment Marks	Result (Y/N)
	Candidate Name	Father's/Mother's Name	Safety Consciousness	Workplace Hygiene	Attendance/ Punctuality	Ability to Follow Manuals/ Written Instructions	Application of Knowledge	Skills to Handle Tools & Equipment	Economical Use of Materials	Speed in Doing Work	Quality in Workmanship	VIVA		
1														
2														