

CURRICULUM
FOR THE TRADE OF
RIGGER
UNDER
APPRENTICESHIP TRAINING SCHEME



सत्यमेव जयते
Government of India

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

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2. BACKGROUND

2.1 Apprenticeship Training Scheme under Apprentice Act 1961

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart Apprenticeship Training on the job in industry to school leavers and person having National Trade Certificate(ITI pass-outs) issued by National Council for Vocational Training (NCVT) to develop skilled manpower for the industry. There are four categories of apprentices namely; **trade apprentice, graduate, technician and technician (vocational) apprentices.**

Qualifications and period of apprenticeship training of **trade apprentices** vary from trade to trade. The apprenticeship training for trade apprentices consists of basic training followed by practical training. At the end of the training, the apprentices are required to appear in a trade test conducted by NCVT and those successful in the trade tests are awarded the National Apprenticeship Certificate.

The period of apprenticeship training for graduate (engineers), technician (diploma holders and technician (vocational) apprentices is one year. Certificates are awarded on completion of training by the Department of Education, Ministry of Human Resource Development.

2.2 Changes in Industrial Scenario

Recently we have seen huge changes in the Indian industry. The Indian Industry registered an impressive growth during the last decade and half. The number of industries in India have increased manifold in the last fifteen years especially in services and manufacturing sectors. It has been realized that India would become a prosperous and a modern state by raising skill levels, including by engaging a larger proportion of apprentices, will be critical to success; as will stronger collaboration between industry and the trainees to ensure the supply of skilled workforce and drive development through employment. Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

2.3 Reformation

The Apprentices Act, 1961 has been amended and brought into effect from 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

- Prescription of number of apprentices to be engaged at establishment level instead of trade-wise.
- Establishment can also engage apprentices in optional trades which are not designated, with the discretion of entry level qualification and syllabus.
- Scope has been extended also to non-engineering occupations.
- Establishments have been permitted to outsource basic training in an institute of their choice.
- The burden of compliance on industry has been reduced significantly.

3. RATIONALE

(Need for Apprenticeship in RiggerTrade)

Almost all industries require Material Handling jobs which are achieved by engaging riggers. They acquire knowledge and skill for safe material handling from mining, shipping, refinery, cargo & dock yard operation, loading, unloading of materials, erection, commissioning, dismantling of machineries, equipment.

4. JOB ROLES: REFERENCE NCO

Brief description of Job roles:

Rigger erects lifting and hauling tackles, pulleys, wire ropes, etc. to lift, move or lower heavy articles such as girders, beams, roofing sheets, machinery, logs, etc. For building, erection, construction or similar purposes. Selects cables, ropes, pulleys, winches, blocks, and sheaves, according to weight and size of load to be moved; attaches pulley and blocks to fixed overhead structures, such as beams, ceilings and pole booms, with bolts and clamps; attaches load with grappling devices, such as loops, wires, ropes and chains, to crane hook; gives directions to Electric Bridge or Gantry Crane Operator or other Hoist Operator engaged in hoisting and moving loads to insure safety of workmen and material handled using hand signals, loud speaker, or telephone. May splice rope and wire cables to make or repair slings and tackle. May direct workers engaged in hoisting machinery and equipment into ships and be designated MACHINERY ERECTOR (Ship and boatbuilding and repair). When hoisting and moving construction machinery onto truck beds, may be designated as MACHINE MOVER (Construction).

Reference NCO:7215.10

5. GENERAL INFORMATION

1. Name of the Trade : RIGGER

2. N.C.O. Code No. :7215.10

3. Duration of Apprenticeship Training (Basic Training + Practical Training): 2years

3.1 For Fresher's:-Duration of Basic Training: -

a) Block –I : 3 months

b) Block – II : 3 months

Total duration of Basic Training: 6 months

Duration of Practical Training (On -job Training): -

a) Block–I: 9 months

b) Block–II : 9 months

Total duration of Practical Training: 18 months

4. Entry Qualification : Passed 8th class examination from recognized school.

5. Selection of Apprentices : The apprentices will be selected as per
Apprenticeship Act amended time to time.

6. Rebate for ITI passed trainees : NIL

Note: Industry may impart training as per above time schedule for different block, however this is not fixed. The industry may adjust the duration of training considering the fact that all the components under the syllabus must be covered. However the flexibility should be given keeping in view that no safety aspects is compromised.

1. COURSE STRUCTURE

Training duration details: -

Time (in months)	1-3	4-12	13-15	16-24
Basic Training	Block- I	-----	Block - II	-----
Practical Training (On - job training)	----	Block - I	-----	Block - II

Components of Training ↓	Duration of Training in Months →																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Basic Training Block - I	█	█	█																						
Practical Training Block - I				█	█	█	█	█	█	█	█														
Basic Training Block - II												█	█	█											
Practical Training Block - II															█	█	█	█	█	█	█	█	█	█	

7. SYLLABUS
7.1 BASIC TRAINING (BLOCK - I & II)
DURATION: 06 MONTHS

GENERAL INFORMATION

- 1) **Name of the Trade** : **RIGGER**
- 2) **Hours of Instruction** : 1000 Hrs. (500 hrs. in each block)
- 3) **Batch size** : 20
- 4) **Power Norms** : 5 KW
- 5) **Space Norms** : 120 sq. mtr.
- 6) **Examination** : The internal assessment will be held on completion of each Block.
- 7) **Instructor Qualification** :
 - a) B.E. /B. Tech in Mechanical Engineering with one year experience in the relevant field.
 - OR
 - b) Diploma in Mechanical Engineering from recognized board of technical education with two years experience in the relevant field.
 - OR
 - c) NTC/NAC in the trade with three years' experience respective in the relevant field.
- 8) **Tools, Equipments& Machinery required** : - As per Annexure – I

7.1.1 DETAIL SYLLABUS OF CORE SKILL

A. Block- I Basic Training

Topic No.	a) Engineering Drawing	Duration (in hours)	b) Workshop Science & Calculation	Duration (in hours)
		30		20
1	Engineering Drawing: Introduction and its importance <ul style="list-style-type: none"> - Viewing of engineering drawing sheets. - Method of Folding of printed Drawing Sheet as per BIS SP:46-2003 		Unit: Systems of unit- FPS, CGS, MKS/SI unit, unit of length, Mass and time, Conversion of units	
2	Drawing Instruments : their uses Drawing board, T-Square, Drafter (Drafting M/c), Set Squares, Protractor, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), Pencils of different Grades, Drawing pins / Clips.		Fractions: Fractions, Decimal fraction, Addition, Subtraction, Multiplication and Division of Fractions and Decimals, conversion of Fraction to Decimal and vice versa. Simple problems using Calculator.	
3	Lines : <ul style="list-style-type: none"> - Definition, types and applications in Drawing as per BIS SP:46-2003 - Classification of lines (Hidden, centre, construction, Extension, Dimension, Section) - Drawing lines of given length (Straight, curved) - Drawing of parallel lines, perpendicular line Methods of Division of line segment		Properties of Material : properties -Physical & Mechanical, Types –Ferrous & Non-Ferrous, difference between Ferrous and Non-Ferrous metals, introduction of Iron, Cast Iron, Wrought Iron, Steel, difference between Iron and Steel, Alloy steel, carbon steel, stainless steel, Non-Ferrous Alloys.	
4	Drawing of Geometrical Figures: Drawing practice on:		Average : Problems of Average. Ratio &Proportion : Simple	

	<ul style="list-style-type: none"> - Angle: Measurement and its types, method of bisecting. - Triangle -different types - Rectangle, Square, Rhombus, Parallelogram. - Circle and its elements. 		<p>calculation on related problems.</p> <hr/> <p>Mass, Weight and Density: Mass, Unit of Mass, Weight, difference between mass and weight, Density, unit of density.</p>	
5	<p><u>Dimensioning:</u></p> <ul style="list-style-type: none"> - Definition, types and methods of dimensioning (functional, non-functional and auxiliary) - Types of arrowhead - Leader Line with text 			
6	<p><u>Free hand drawing of</u></p> <ul style="list-style-type: none"> - Lines, polygons, ellipse, etc. - geometrical figures and blocks with dimension - Transferring measurement from the given object to the free hand sketches. 			
7	<p><u>Method of presentation of Engineering Drawing</u></p> <ul style="list-style-type: none"> - Pictorial View - Orthogonal View - Isometric view 		<p><u>Percentage:</u> Introduction, Simple calculation. Changing percentage to decimal and fraction and vice-versa.</p>	
8	<p><u>Symbolic Representation (as per BIS SP:46-2003) of:</u></p> <ul style="list-style-type: none"> - Fastener (Rivets, Bolts and Nuts) - Bars and profile sections - Weld, brazed and soldered joints. - Electrical and electronics element - Piping joints and fittings 		<ul style="list-style-type: none"> - Forces definition. - Definition and example of compressive, tensile, shear forces, axial and tangential forces. <p>Stress, strain, ultimate strength, factor of safety for MS.</p> <p><u>Speed and Velocity:</u> Rest and motion, speed, velocity, difference between speed and velocity, acceleration, retardation.</p> <hr/> <p><u>Mensuration:</u> Area and perimeter of square, rectangle, parallelogram, triangle, circle, semi circle. Volume of solids – cube,</p>	

			<p>cuboids, cylinder and Sphere. Surface area of solids – cube, cuboids, cylinder and Sphere. - Area of cut-out regular surfaces: circle and segment and sector of circle.</p> <p>- Volume of cut-out solids: hollow cylinders, frustum of cone, block section. - Volume of simple solid blocks.</p>	
9	<p><u>Construction of Geometrical Drawing Figures:</u> - Polygons and their values of included angles. Conic Sections (Ellipse)</p>		<p><u>Work, Power and Energy:</u> work, unit of work, power, unit of power, Horse power, mechanical efficiency, energy, use of energy, potential and kinetic energy, examples of potential energy and kinetic energy.</p>	
10	<p><u>Projections:</u> - Concept of axes plane and quadrant. - Orthographic projections - Method of first angle and third angle projections (definition and difference) - Symbol of 1st angle and 3rd angle projection as per IS specification.</p> <p>Drawing of Orthographic projection from isometric/3D view of blocks</p>			

B. Block- II
Basic Training

Topic No.	a) Engineering Drawing	Duration (in hours)	b) Workshop Science & Calculation	Duration (in hours)
1	- Machined components; concept of fillet & chamfer; surface finish symbols.	30	Geometry: Properties of angles, triangles and circles. Area of trapezoid, parallelograms, length of diagonals of square and rectangle. Pythagoras theorem. Area and Circumference of circle.	20
2	- Screw thread, their standard forms as per BIS, external and internal thread, conventions on the features for drawing as per BIS.		Heat & Temperature: Heat and temperature, their units, difference between heat and temperature, boiling point, melting point, scale of temperature, relation between different scale of temperature, Thermometer, pyrometer, transmission of heat, conduction, convection, radiation.	
3	- Reading & interpretation of assembly drawing and detailing.		Basic Electricity: Introduction, use of electricity, Types of current_ AC, DC, their comparison, voltage, resistance, their units. Conductor, insulator, Types of connections – series, parallel, electric power, Horse power, energy, unit of electrical energy. Concept of earthing.	

4	<ul style="list-style-type: none"> - Free hand sketching of nuts, bolts, rivets, washers, key screw threads etc. from sample with dimensions. - Simple orthographic – 1st angle. View of simple hollow and solid bodies with dimensions. 		<p>Friction and its application in Workshop practice.</p>	
5	<ul style="list-style-type: none"> - Simple exercises related to trade related symbols. - Solution of NCVT test papers. 		<p>Concept of pressure – units of pressure, atmospheric pressure, gauge pressure – gauges used for measuring pressure.</p> <p>Introduction to pneumatics & hydraulics systems.</p> <p>Solution of NCVT test papers</p>	

7.1.2 DETAIL SYLLABUS OF PROFESSIONAL SKILLS & PROFESSIONAL KNOWLEDGE

A. Block -I Basic Training

Week No.	Professional Skills (275 Hours)	Week No.	Professional Knowledge (120 Hours)
1	Awareness of safety norms. Fire prevention and personal safety. Ergonomic safety and health principles. Use various PPE while working	1	Awareness of safety norms. Fire prevention and personal safety. Ergonomic safety and health principles. Use various PPE while working. Safety during material handling
2	Identification of tools and tackles.	2	Operating procedures of material handling equipments, including manual handling. Knowledge of different tools and tackles used in rigging
3	Practice of various knots (reef, emergency, kadam, two half, bow line, etc)	3	Application knots and hitches
4	Splicing of sling, making eye using bull dog grip	4	Types OF SLING ,Construction of manila and steel rope
5	Use of table to know the capacity of rope	5	SWL of slings base on apical angle
6	Ability to select of steel sling	6	Selection /Rejection criteria of steel sling
7	Lifting rolls, pipe, cuboid plate , drums using sling	7	Application of sling (choker, basket,)
8	Storage of sling on shop floor.	8	Care and maintenance of rope
9	Measuring diameter of sling to find out its capacity	9	Capacity of steel rope
Assessment / Examination (03 days)			

B. Block –II
Basic Training

Week No.	Professional Skills	Week No.	Professional Knowledge
1	Lifting load using chain block Lifting load using jacks	1	a) Construction and application of chain block. b) Different type of jacks, chain block, and pull lift
2	Making portable scaffolding	2	Knowledge of different types of scaffolding
3	Ascending and descending on scaffolding	3	Safety during working on scaffolding
4	Shifting a motor or gear box	4	Application of sling on irregular shape load. Material movement by using different rigging tools and technique.
5	Repairing and checking tackle before use.	5	Maintenance of tools and tackles.
6	Lifting load using derrick	6	Types of derrick, use of derrick
7	Shifting load using winch	7	Types of winch, application winch.
8	Find out weight of load.	8	Calculation and estimation of weight of load.
9	Use of different legs of sling	9	Application of sling at different angle
10	Use of appropriate signal while using crane	10	Crane hand signal for EOT crane and mobile crane.
11	Assessment / Examination (03 days)		

7.1.3 EMPLOYABILITY SKILLS

GENERAL INFORMATION

- 1) **Name of the subject** : **EMPLOYABILITY SKILLS**
- 2) **Applicability** : **ATS- Mandatory for fresher only**
- 3) **Hours of Instruction** : **110 Hrs. (55 hrs. in each block)**
- 4) **Examination** : **The examination will be held at the end of two years Training by NCVT.**
- 5) **Instructor Qualification** :

i) MBA/BBA with two years experience or graduate in sociology/social welfare/Economics with two years experience and trained in Employability skill from DGET Institute.

And

Must have studied in English/Communication Skill and Basic Computer at 12th /diploma level

OR

ii) Existing Social Study Instructor duly trained in Employability Skill from DGET Institute.

7.1.3.1 SYLLABUS OF EMPLOYABILITY SKILLS

A. Block – I Basic Training

Topic No.	Topic	Duration (in hours)
	English Literacy	15
1	Pronunciation : Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)	
2	Functional Grammar Transformation of sentences, Voice change, Change of tense, Spellings.	
3	Reading Reading and understanding simple sentences about self, work and environment	
4	Writing Construction of simple sentences Writing simple English	
5	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.	
	I.T. Literacy	15
1	Basics of Computer Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.	
2	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.	
3	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	
4	Computer Networking and INTERNET Basic of computer Networks (using real life examples), Definitions of	

	<p>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.</p>	
	Communication Skill	25
71	<p>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. Case study/Exercise</p>	
2	<p>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.</p>	
3	<p>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. Case study/Exercise</p>	
4	<p>Facing Interviews Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview</p>	
5	<p>Behavioral Skills Organizational Behavior Problem Solving Confidence Building Attitude Decision making Case study/Exercise</p>	

B. Block- II
Basic Training

Topic No.	Topic	Duration (in hours)
	Entrepreneurship skill	15
1	Concept of Entrepreneurship Entrepreneurship- 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.	
2	Project Preparation & Marketing analysis Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of Product Life Cycle (PLC), Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.	
3	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.	
4	Investment Procurement Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.	
	Productivity	10
1	Productivity Definition, Necessity, Meaning of GDP.	
2	Affecting Factors Skills, Working Aids, Automation, Environment, Motivation How improves or slows down.	
3	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.	
4	Personal Finance Management Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.	
	Occupational Safety, Health & Environment Education	15
1	Safety & Health Introduction to Occupational Safety and Health importance of safety and health at workplace.	
2	Occupational Hazards Basic Hazards, Chemical Hazards, Vibro-acoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.	

3	Accident & safety Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.	
4	First Aid Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person	
5	Basic Provisions Idea of basic provision of safety, health, welfare under legislation of India.	
6	Ecosystem Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.	
7	Pollution Pollution and pollutants including liquid, gaseous, solid and hazardous waste.	
8	Energy Conservation Conservation of Energy, re-use and recycle.	
9	Global warming Global warming, climate change and Ozone layer depletion.	
10	Ground Water Hydrological cycle, ground and surface water, Conservation and Harvesting of water	
11	Environment Right attitude towards environment, Maintenance of in -house environment	
	Labour Welfare Legislation	5
1	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.	
	Quality Tools	10
1	Quality Consciousness : Meaning of quality, Quality Characteristic	
2	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.	
3	Quality Management System : Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.	
4	House Keeping : Purpose of Housekeeping, Practice of good Housekeeping.	
5	Quality Tools Basic quality tools with a few examples	

7.2 PRACTICAL TRAINING (ON-JOB TRAINING) **(BLOCK - I & II)**

DURATION: 18 MONTHS (9 months in each block)

GENERAL INFORMATION

- 1) **Name of the Trade** : **RIGGER**
- 2) **Batch size** : : a) Apprentice selection as per Apprenticeship Guidelines
b) Maximum 20 candidates in a group
- 3) **Examination** : i) The internal assessment will be held on completion of each block
ii) NCVT exam will be conducted at the end of 2nd year.
- 4) **Instructor Qualification** :
 - a) B.E. /B. Tech in Mechanical Engineering with one year experience in the relevant field.
OR
 - b) Diploma in Mechanical Engineering from recognized board of technical education with two years experience in the relevant field.
OR
 - c) NTC/NAC in the trade with three years' experience respective in the relevant field.
- 5) **Infrastructure for On Job Training** : - As per Annexure – II

7.2.1 BROAD SKILL COMPONENT TO BE COVERED DURING ON-JOB TRAINING

A. BLOCK - I

1. Safety and best practices (5S, KAIZEN etc.)
2. Record keeping and documentation
3. Repair & Maintenance work

DURATION: 09 MONTHS (39 WEEKS)	
SL NO	LIST OF OPERATIONS/SKILLS TO BE COVERED DURING INDUSTRIAL TRAINING
1.	Accident prevention and safety regulations while material handling, eliminating unsafe conditions, unsafe actions, discovering causes of accidents. Fire prevention and personal safety.
2.	Operating procedures of material handling equipments, including manual handling.
3.	Hand signaling/radio communication
4.	By using different standards signals for hoisting and lifting operations with angles radius and boom length calculations.
5.	Application/Rigging method.
6.	Clamping de-clamping of hooks
7.	Clamping de-clamping of wire ropes.
8.	Clamping de-clamping of wire slings.
9.	Types of tackles.
10.	Visual inspection of tackles capacity wise standard operating practice(SOP).
11.	Safety-PPE usage and its benefits
12.	Inspection and validation of tackles- De shackles
13.	Inspection and validation of tackles- wire ropes.
14.	Dismantling and assembling of load lifting accessories- jack, pulley block, chain block, sheave block, pull lift, snatch block
15.	Inspection and validation of tackles- hooks.
16.	Removing the pulley block, and cranes
17.	Making different knots
18.	Making of Hitches
19.	Using of special accessories for lifting the load like- spreader beam, tong, magnet, grab bucket, c- hook scissors clamp
20.	Practices of standard crane signaling for material handling
21.	Ability to work at height by using safety appliances
22.	Inspection and validation of tackles- hand operated chain pulley blocks.
23.	Inspection and validation of chain lever hoist.

B. BLOCK – II

1. Safety and best practices (5S, KAIZEN etc.)
2. Store procedure, Record keeping, inventory management and documentation
3. Repair & Maintenance work

DURATION: 09 MONTHS (39 WEEKS)	
SL NO	LIST OF OPERATIONS/SKILLS TO BE COVERED DURING INDUSTRIAL TRAINING
1	Rigging arrangement on radar mast.
2	Reeling of wires on board on wire reels.
3	Fixing of fire extinguishers on board.
4	Fixing and survey of navigational light on board.
5	Housing of mooring lines for ship movements at jetty and during docking and undocking.
6	Care and maintenance of mooring lines tools and equipment .
7	Securing poppets and sliding ways, laying of drag wires, release arrangement for drag chains and such work.
8	Different ways of slinging- Single part, two part, three part, four part, chocker, basket etc.
9	Application of winch- manual and motorized.
10	Application of Derick.
11	Making different types of scaffolding.
12	Replacement of crane wheels- application of jack(Mechanical, hydraulic)
13	Selection of lifting equipment and accessories as per shape , size and weight of the lifting load
14	Able to select, reject, maintain and storage of different types of slings, chain, belts

8. ASSESSMENT STANDARD

8.1 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 assessment. Due consideration to be given while assessing for team work, avoidance/reduction of scrape/wastage and disposal of scarp/wastage as per procedure, behavioral attitude and regularity in training.

The following marking pattern to be adopted while assessing:

a) Weightage in the range of 60-75% to be allotted during assessment under following performance level:

For this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of an acceptable standard of craftsmanship.

In this work there is evidence of:

- Good skill levels in the use of hand tools, machine tools and workshop equipment
- Many tolerances while undertaking different work are in line with those demanded by the component/job.
- A fairly good level of neatness and consistency in the finish
- Occasional support in completing the project/job.

b) Weightage in the range of above 75%- 90% to be allotted during assessment under following performance level:

For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work which demonstrates attainment of a reasonable standard of craftsmanship.

In this work there is evidence of:

- Good skill levels in the use of hand tools, machine tools and workshop equipment
- The majority of tolerances while undertaking different work are in line with those demanded by the component/job.
- A good level of neatness and consistency in the finish
- Little support in completing the project/job

c) Weightage in the range of above 90% to be allotted during assessment under following performance level:

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.

In this work there is evidence of:

- High skill levels in the use of hand tools, machine tools and workshop equipment

- Tolerances while undertaking different work being substantially in line with those demanded by the component/job.
- A high level of neatness and consistency in the finish.
- Minimal or no support in completing the project

8.2 FINAL ASSESSMENT- ALL INDIA TRADE TEST (SUMMATIVE ASSESSMENT)

SUBJECTS	Marks	Sessional Marks	Full Marks	Pass Marks	Duration of Exam.
Practical	300	100	400	240	08 hrs.
Trade Theory	100	20	120	48	3 hrs.
Workshop Cal. & Sc.	50	10	60	24	3 hrs.
Engineering Drawing	50	20	70	28	4 hrs.
Employability Skill	50		50	17	2 hrs.
Grand Total	550	150	700	-	

Note: - The candidate pass in each subject conducted under all India trade test.

9. FURTHER LEARNING PATHWAYS

On successful completion of the course,

- The trainees will be employed in reputed Industries / Organizations.

Employment opportunities:

On successful completion of this course, the candidates shall be gainfully employed in the following industries:

1. Production and Manufacturing industries related.
2. Mining and marine industries
3. Oil and natural gas sector industries

TOOLS & EQUIPMENT FOR BASIC TRAINING**INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL
KNOWLEDGE****TRADE: RIGGER****LIST OF TOOLS & EQUIPMENTS FOR 20 APPRENTICES**

Sl. No.	Description	Quantity
1.	Rule steel 12 cm, with metric graduation also	10
2.	Square, try 4" blade	5
3.	Calliper inside 6" spring	5
4.	Calliper 6" Hermaphrodite	5
5.	Divider 6" spring	5
6.	Scriber 6"	5
7.	Punch Centre 4"	5
8.	Chisel Cold flat 150 mm	10
9.	Punch dot 100X12 mm	5
10.	File flat bastered 200 mm	10
11.	File flat second cut 200 mm	10
12.	File half round , second cut 100 mm	10
13.	Hacksaw frame adjustable 8'- 12"	10
14.	Goggle	20
15.	Apron leather	20
16.	Blacksmiths safety boots	20
17.	Rule, brass fourfold 60 cm	2
18.	Compass wing	2
19.	Top Swage 12 mm rodded	2
20.	Forge with hood 7 chimney blower etc	1
21.	Anvil on stand	1
22.	Marking knife (carpenters)	5
23.	Saw hand 450 mm	5
24.	Saw Tenon 300 mm	5
25.	Mallet medium (IS-2922)	2
26.	File triangular second cut 125 mm	5
27.	Plane jack 450 mm wooden stock 40 mm collar	4
28.	Chisel firmer 12 mm to 22 mm by 2 mm	10
29.	Bench working 8'X4'X2 ¹ / ₂ '	4
30.	Surface plate 18"X18"	2
31.	Marking table 3'X3'X4'height	1
32.	Gauge universal 10"surface	2
33.	Portable hand drill (Electric) 0"- ¼"	1
34.	Universal scribing block 9"	1
35.	Grinder pedestal motorised 250 mm X 25 mm	1
36.	Scribing block	1

37.	Drill pillar motorised	1
38.	First aid box	1
39.	Fire extinguisher	1

Note: In case of basic training setup by the industry the tools, equipment and machinery available in the industry may also be used for imparting basic training.

**INFRASTRUCTURE FOR WORKSHOP CALCULATION & SCIENCE AND
ENGINEERING DRAWING**

TRADE: RIGGER

LIST OF TOOLS & EQUIPMENTS FOR 20 APPRENTICES

- 1) **Space Norms** : 45 Sq. m.(For Engineering Drawing)
2) **Infrastructure:**

A: TRAINEES TOOL KIT:-

Sl. No.	Name of the items	Quantity (indicative)
1.	Draughtsman drawing instrument box	20 Nos.
2.	Set square celluloid 45 ⁰ (250 X 1.5 mm)	20 Nos.
3.	Set square celluloid 30 ⁰ -60 ⁰ (250 X 1.5 mm)	20 Nos.
4.	Mini drafter	20 Nos.
5.	Drawing board (700mm x500 mm) IS: 1444	20 Nos.

B: FURNITURE REQUIRED

Sl. No.	Name of the items	Quantity (indicative)
1	Drawing Board	20 Nos.
2	Models : Solid & cut section	As required
3	Drawing Table for trainees	As required
4	Stool for trainees	As required
5	Cupboard (big)	1 No.
6	White Board (size: 8ft. x 4ft.)	1 No.
7	Trainer's Table	1 No.
8	Trainer's Chair	1 No.

INFRASTRUCTURE FOR ON JOB TRAINING

TRADE: RIGGER

For Batch of 20 APPRENTICES

Actual training will depend on the existing facilities available in the establishments. However, the industry should ensure that the broad skills defined against On-Job Training part (i.e. 9 months + 9 months) are imparted. In case of any short fall the concern industry may impart the training in cluster mode/ any other industry/ at ITI.

GUIDELINES FOR INSTRUCTORS AND PAPER SETTERS

1. Due care to be taken for proper & inclusive delivery among the batch. Some of the following some method of delivery may be adopted:
 - A) LECTURE
 - B) LESSON
 - C) DEMONSTRATION
 - D) PRACTICE
 - E) GROUP DISCUSSION
 - F) DISCUSSION WITH PEER GROUP
 - G) PROJECT WORK
 - H) INDUSTRIAL VISIT
2. Maximum utilization of latest form of training viz., audio visual aids, integration of IT, etc. may be adopted.
3. The total hours to be devoted against each topic may be decided with due diligence to safety & with prioritizing transfer of required skills.