

# OPERATOR MATERIAL HANDLING EQUIPMENTS AT RAW MATERIAL HANDLING PLANT

## COMPETENCY BASED CURRICULUM

(Duration: 1 Year 3 Months)

## APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 3



## SECTOR – PRODUCTION & MANUFACTURING



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

# **OPERATOR MATERIAL HANDLING EQUIPMENTS AT RAW MATERIAL HANDLING PLANT**



**NSQF LEVEL - 3**

**Skill India**  
कौशल भारत - कुशल भारत

Developed By

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Directorate General of Training  
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### ***Operator Material Handling at Raw Material Handling Plant***

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## **1. BACKGROUND**

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### **1.1 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.

### **1.2 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.

### **1.3 Reformation**

The Apprentices Act, 1961 has been amended and brought into effect from 22<sup>nd</sup> 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.



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## **2. TRAINING SYSTEM**

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### **2.1 GENERAL**

Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under 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.

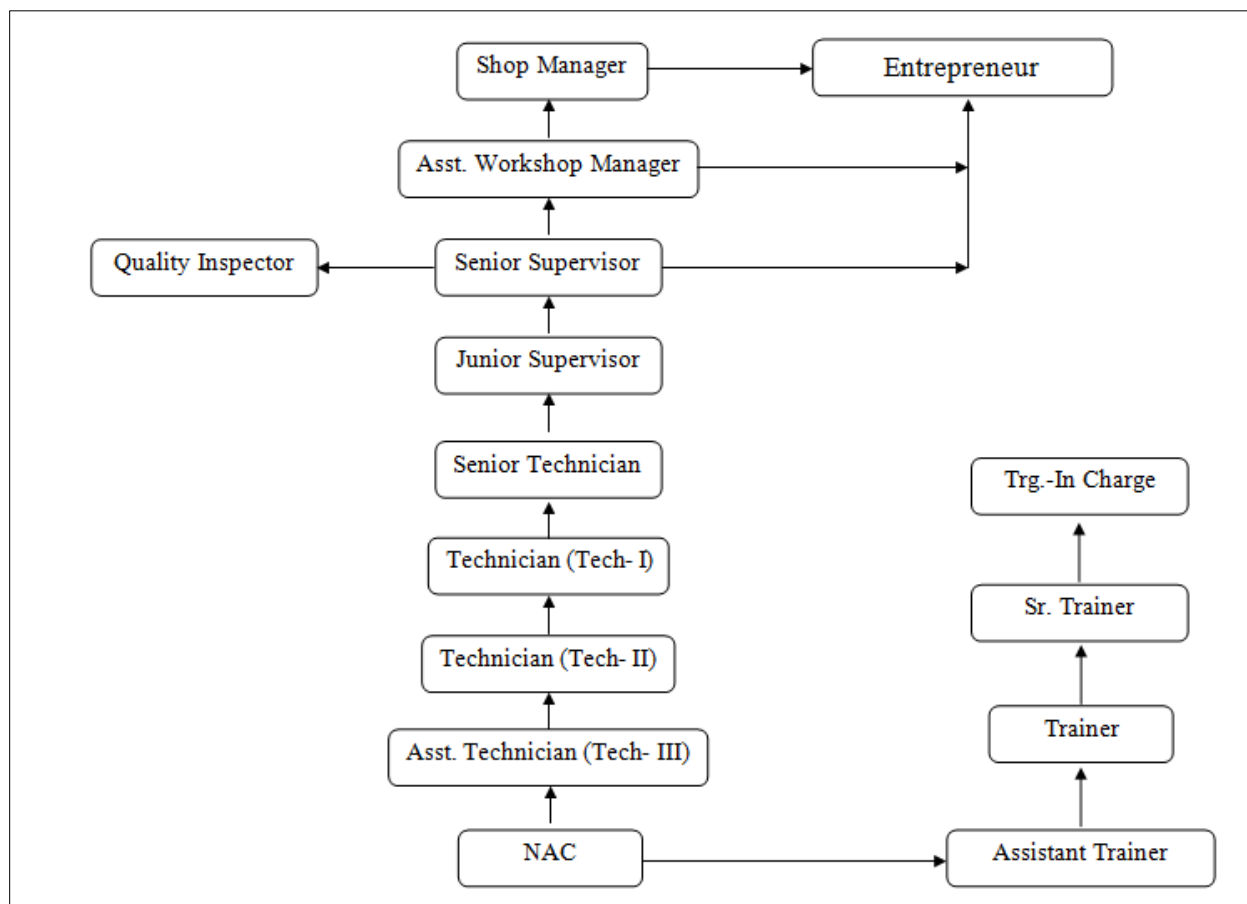
Operator Material Handling Equipments at Raw Material Handling Plant trade under ATS is one of the most popular courses delivered nationwide through different industries. The course is of one year three months (01 Block of 15 months duration including basic training) duration. It mainly consists of Domain area and Core area. In the Domain area Trade Theory & Practical impart professional - skills and knowledge, while Core area - Workshop Calculation and science, Engineering Drawing and Employability Skills imparts requisite core skills & knowledge and life skills. After passing out the training programme, the trainee is being awarded National Apprenticeship Certificate (NAC) by NCVT having worldwide recognition.

**Broadly candidates need to demonstrate that they are able to:**

- Read & interpret technical parameters/document, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge, core skills & employability skills while performing jobs and solve problem during execution.
- Check the job/assembly as per drawing for functioning, identify and rectify errors in job/assembly.
- Document the technical parameters related to the task undertaken.

### 2.2 CAREER PROGRESSION PATHWAYS:

- Indicative pathways for vertical mobility.



### 2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of one year (*Basic Training and On-Job Training*) : -

**Total training duration details: -**

| Time<br>(in months)                       | 1-3      | 4 - 15    |
|-------------------------------------------|----------|-----------|
| Basic Training                            | Block– I | -----     |
| Practical Training<br>(On - job training) | ----     | Block – I |

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### A. Basic Training

For 02 yrs. course (Engg.) :-(**Total 06 months:** 03 months in 1<sup>st</sup>yr. + 03 months in 2<sup>nd</sup> yr.)

For 01 yr. course (Engg.) :-(**Total 03 months:** 03 months in 1<sup>st</sup>yr.)

| S No. | Course Element                               | Total Notional Training Hours |                   |
|-------|----------------------------------------------|-------------------------------|-------------------|
|       |                                              | For 02 Yrs. course            | For 01 Yr. course |
| 1.    | Professional Skill (Trade Practical)         | 550                           | 275               |
| 2.    | Professional Knowledge (Trade Theory)        | 240                           | 120               |
| 3.    | Workshop Calculation & Science               | 40                            | 20                |
| 4.    | Engineering Drawing                          | 60                            | 30                |
| 5.    | Employability Skills                         | 110                           | 55                |
|       | <b>Total (Including internal assessment)</b> | <b>1000</b>                   | <b>500</b>        |

### B. On-Job Training:-

For 02 yrs. Course (Engg.) :-(**Total 18 months:** 09 months in 1<sup>st</sup>yr. + 09 months in 2<sup>nd</sup> yr.)

Notional Training Hours for On-Job Training: 3120 Hrs.

For 01 yr. course (Engg.) :-( **Total 12 months**)

Notional Training Hours for On-Job Training: 2080 Hrs.

### C. Total training hours:-

| Duration                             | Basic Training | On-Job Training | Total     |
|--------------------------------------|----------------|-----------------|-----------|
| <b>For 02 yrs. course</b><br>(Engg.) | 1000 hrs.      | 3120 hrs.       | 4120 hrs. |
| <b>For 01 yr. course</b><br>(Engg.)  | 500 hrs.       | 2080 hrs.       | 2580 hrs. |

## 2.4 ASSESSMENT & CERTIFICATION:

The trainee will be tested for his skill, knowledge and attitude during the period of course and at the end of the training programme as notified by Govt of India from time to time. The Employability skills will be tested in first two semesters only.

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

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institute have to maintain 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 NAC will be conducted by NCVT on completion of course as per guideline of Govt 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 basis for setting question papers for final assessment. The examiner during final examination will also check individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.**

### **2.4.1 PASS REGULATION**

The minimum pass percent for Practical is 60% & minimum pass percent for Theory subjects 40%. The candidate pass in each subject conducted under all India trade test.

### **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 assessment. Due consideration should be given while assessing for team work, avoidance/reduction of scrap/wastage and disposal of scarp/wastage as per procedure, behavioral attitude, sensitivity to 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 examination body. The following marking pattern to be adopted while assessing:

| Performance Level                                                      | Evidence |
|------------------------------------------------------------------------|----------|
| (a) Weightage in the range of 60 -75% to be allotted during assessment |          |

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|                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For performance in 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.                        | <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/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.</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) Weightage in the range of above 75% - 90% to be allotted during assessment                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 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.                                           | <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/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.</li> <li>• A good level of neatness and consistency in the finish</li> <li>• Little support in completing the project/job</li> </ul>                          |
| (c) Weightage in the range of above 90% to be allotted during assessment                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 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. | <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/accuracy achieved while undertaking different work with those demanded by the component/job/set standards.</li> <li>• A high level of neatness and consistency in the finish.</li> <li>• Minimal or no support in completing the project.</li> </ul>                  |

### **3. JOB ROLE**

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**Brief description of Job roles:**

- Demonstrate mechanical aptitude of equipment and how to properly maintain items such as conveyors, coal pullers, coal car shakers, crushers, dozer and loader.
- Knowledge of general operation of the Central Heating and Power Plant (CHPP) and associated coal handling equipment.
- Knowledge of these tools to operate and maintain the coal processing equipment and machinery.
- Ability to operate and perform maintenance on the coal storage pile dozer, front end loader and car mover.
- Ability to work out of doors or in confined areas for extended periods under unfavorable conditions and without constant supervision.
- Ability to understand and execute written and oral instructions and relay instructions to follow-on shifts when multi-shift operations are used.
- Sufficient physical strength, ability, dexterity, vision and hearing to perform all the work of this position.
- Ability to communicate effectively with supervisor, other operators and plant personnel.
- Able to demonstrate initiative and be able to work with little supervision.
- Able to identify potential safety hazards, including fire or explosive hazards and take immediate action to correct the hazard and report the situation to supervisory personnel on site.
- Willing to maintain plant and equipment in a clean, serviceable condition.

**Operator Raw Material Handling Equipment** operates various raw materials handling equipment such as Wagon tippler, Stacker & reclaimer, track hopper, crusher, screen, belt conveyors etc. He operates and maintains pollution control equipment.

**Reference NCO 2015:**

- i. **8342.1201 – Dumper Operator/Dumper/Tipper Operator**
- ii. **8342.1500 – Tripler Machine Operator**
- iii. **8342.1600 – Conveyor Operator**
- iv. **8342.9900 – Earth Moving and Related Plant Operators, others.**

**4. NSQF LEVEL COMPLIANCE**

NSQF level for Operator Material Handling Equipments at Raw Material Handling Plant trade under ATS: **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 and
- e. Responsibility.



The Broad Learning outcome of Operator Material Handling Equipments at Raw Material Handling Plant trade under ATS 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 put a job which may require limited range of activities routine and predictable | Basic facts, process and principle applied in trade 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<br>Some Responsibility for own work within defined limit. |

**5. GENERAL INFORMATION**

|                                                                                                                    |                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name of the Trade</b>                                                                                           | Operator Material Handling Equipments At Raw Material Handling Plant                                                                                                                       |
| <b>NCO - 2015</b>                                                                                                  | 8342.1201 Dumper Operator/Dumper/Tipper Operator,<br>8342.1500 Tripler Machine Operator,<br>8342.1600 Conveyor Operator,<br>8342.9900 Earth Moving and Related Plant Operators, others     |
| <b>NSQF Level</b>                                                                                                  | Level – 3                                                                                                                                                                                  |
| <b>Duration of Apprenticeship Training</b><br>(Basic Training + On-Job Training)                                   | 3 months + One year (01 Block of 15 months duration including basic training).                                                                                                             |
| <b>Duration of Basic Training</b>                                                                                  | a) Block –I : 3 months<br><b>Total duration of Basic Training: 3 months</b>                                                                                                                |
| <b>Duration of On-Job Training</b>                                                                                 | a) Block–I: 12 months<br><b>Total duration of Practical Training: 12 months</b>                                                                                                            |
| <b>Entry Qualification</b>                                                                                         | Passed 8th class Examination                                                                                                                                                               |
| <b>Selection of Apprenticeship</b>                                                                                 | The apprentices will be selected as per Apprenticeship Act amended time to time.                                                                                                           |
| <b>Instructors Qualification for Basic Training</b>                                                                | As per ITI instructors qualifications as amended time to time for the specific trade.                                                                                                      |
| <b>Examination</b>                                                                                                 | The internal examination/ assessment will be held on completion of each block.<br>Final examination for all subjects will be held at the end of course and same will be conducted by NCVT. |
| <b>Rebate to Ex-ITI Trainees</b>                                                                                   | 03 months                                                                                                                                                                                  |
| <b>CTS trades eligible for Operator Material Handling Equipments at Raw Material Handling Plant Apprenticeship</b> | Operator Material Handling Equipments at Raw Material Handling Plant                                                                                                                       |

**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.
- For imparting Basic Training the industry to tie-up with ITIs having such specific trade and affiliated to NCVT.

## **6. LEARNING OUTCOME**

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### **6.1 GENERIC LEARNING OUTCOME**

The following are minimum broad Common Occupational Skills/ Generic Learning Outcome after completion of the Operator Material Handling Equipments at Raw Material Handling Plant course of 01 years duration under ATS.

#### **Block I:-**

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Understand and explain different mathematical calculation & science in the field of study including basic electrical. *[Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure]*
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. *[Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical & electronic symbol]*
4. Select and ascertain measuring instrument and measure dimension of components and record data.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
8. Plan and organize the work related to the occupation.

### **6.2 SPECIFIC LEARNING OUTCOME**

#### **Block – I**

1. Demonstrate mechanical aptitude of equipment and how to properly maintain items such as conveyors, coal pullers, coal car shakers, crushers, dozer and loader.
2. Knowledge of general operation of the Central Heating and Power Plant (CHPP) and associated coal handling equipment.

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3. Knowledge of these tools to operate and maintain the coal processing equipment and machinery.
4. Ability to operate and perform maintenance on the coal storage pile dozer, front end loader and car mover.
5. Ability to work out of doors or in confined areas for extended periods under unfavorable conditions and without constant supervision.
6. Ability to understand and execute written and oral instructions and relay instructions to follow-on shifts when multi-shift operations are used.
7. Sufficient physical strength, ability, dexterity, vision and hearing to perform all the work of this position.
8. Ability to communicate effectively with supervisor, other operators and plant personnel.
9. Able to demonstrate initiative and be able to work with little supervision.
10. Able to identify potential safety hazards, including fire or explosive hazards and take immediate action to correct the hazard and report the situation to supervisory personnel on site.
11. Willing to maintain plant and equipment in a clean, serviceable condition.

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



## 7. LEARNING OUTCOME WITH ASSESSMENT CRITERIA

| GENERIC LEARNING OUTCOME                                                                                  |                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEARNING OUTCOMES                                                                                         | 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.                                                                  |
|                                                                                                           | 1. 2. Recognize and report all unsafe situations according to site policy.                                                                                                                                            |
|                                                                                                           | 1. 3. Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.                                                                                          |
|                                                                                                           | 1. 4. Identify, handle and store / dispose off dangerous/unsalvageable goods and substances according to site policy and procedures following safety regulations and requirements.                                    |
|                                                                                                           | 1. 5. Identify and observe site policies and procedures in regard to illness or accident.                                                                                                                             |
|                                                                                                           | 1. 6. Identify safety alarms accurately.                                                                                                                                                                              |
|                                                                                                           | 1. 7. Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.                                 |
|                                                                                                           | 1. 8. Identify and observe site 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.                                                                                                                                      |
|                                                                                                           | 1. 12. Identify environmental pollution & contribute to avoidance of same.                                                                                                                                            |
|                                                                                                           | 1. 13. Take opportunities to use energy and materials in an environmentally friendly manner                                                                                                                           |
|                                                                                                           | 1. 14. Avoid waste and dispose waste as per procedure                                                                                                                                                                 |
|                                                                                                           | 1. 15. Recognize different components of 5S and apply the same in the working environment.                                                                                                                            |
| 2. Understand, explain different mathematical calculation & science in the field of study including basic | 2.1 Explain concept of basic science related to the field such as Material science, Mass, weight, density, speed, velocity, heat & temperature, force, motion, pressure, heat treatment, centre of gravity, friction. |

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|                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| electrical and apply in day to day work. <i>[Different mathematical calculation &amp; science -Work, Power &amp; Energy, Algebra, Geometry &amp; Mensuration, Trigonometry, Heat &amp; Temperature, Levers &amp; Simple machine, graph, Statistics, Centre of gravity, Power transmission, Pressure]</i>                                                                                                                     | 2.2 Measure dimensions as per drawing                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 2.3 Use scale/ tapes to measure for fitting to specification.                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 2.4 Comply given tolerance.                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 2.5 Prepare list of appropriate materials by interpreting detail drawings and determine quantities of such materials.                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 2.6 Ensure dimensional accuracy of assembly by using different instruments/gauges.                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 2.7 Explain basic electricity, insulation & earthing.                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                            |
| 3. Interpret specifications, different engineering drawing and apply for different application in the field of work. <i>[Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components &amp; different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical &amp; electronic symbol]</i> | 3. 1. Read & interpret the information on drawings and apply in executing practical work.                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 3. 2. Read & analyse the specification to ascertain the material requirement, tools, and machining /assembly /maintenance parameters.                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 3. 3. Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work. |
|                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                            |
| 4. Select and ascertain measuring instrument and measure dimension of components and record data.                                                                                                                                                                                                                                                                                                                            | 4.1 Select appropriate measuring instruments such as micrometers, vernier calipers, dial gauge, bevel protector and height gauge (as per tool list).       |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 4.2 Ascertain the functionality & correctness of the instrument.                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 4.3 Measure dimension of the components & record data to analyse the with given drawing/measurement.                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                            |
| 5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.                                                                                                                                                                                                                                                                   | 5.1 Explain the concept of productivity and quality tools and apply during execution of job.                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.2 Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.3 Knows benefits guaranteed under various acts                                                                                                           |

## Operator Material Handling at Raw Material Handling Plant

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 6.1 Explain the concept of energy conservation, global warming, pollution and utilize the available resources optimally & remain sensitive to avoid environment pollution.                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6.2 Dispose waste following standard procedure.                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                 |
| 7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 7. 1. Explain personnel finance and entrepreneurship.                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7. 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 familiarizes with the Policies /Programmes & procedure & the available scheme. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7. 3. Prepare Project report to become an entrepreneur for submission to financial institutions.                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                 |
| 8. Plan and organize the work related to the occupation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 8. 1. Use documents, drawings and recognize hazards in the work site.                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8. 2. Plan workplace/ assembly location with due consideration to operational stipulation                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8. 3. Communicate effectively with others and plan project tasks                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8. 4. Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.                                                                                                                          |
| <b>SPECIFIC OUTCOME</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                 |
| <b><u>Block-I</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                 |
| <p><i>Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under <b>block – I</b> (section: 10) must ensure that the trainee achieves well developed skill with clear choice of procedure in familiar context. Assessment criteria should broadly cover the aspect of <b>Planning</b> (Identify, ascertain, etc.); <b>Execution</b> 1) Perform, illustration, etc. by applying basic methods, tools, materials and information 2) Knowledge of basic facts, process and principle applied in trade of employment 3) Basic Mathematical Skills and <b>Checking/ Testing</b> to ensure functionality during the assessment of each outcome. The assessments parameters must also ascertain that the candidate is responsible for own work within defined limit.</i></p> |                                                                                                                                                                                                                                                 |

**BASIC TRAINING (Block – I)**

**Duration: (03) Three Months**

| Week No. | Professional Skills (Trade Practical)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Professional Knowledge (Trade Theory)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.       | <p>Safety: - its importance, classification, personal, general, workshop and job safety. Occupational health and safety. Basic injury prevention, Basic first aid, Hazard identification and avoidance, safety signs for Danger, Warning, caution &amp; personal safety message. Preventive measures for electrical accidents &amp; steps to be taken in such accidents. Importance of housekeeping &amp; good shop floor practices. Disposal procedure of waste materials like cotton waste, metal chips/burrs etc. Fire&amp; safety: Use of Fire extinguishers. Safety regarding working with different types of steam and its First-Aid. Drill on fire fighting &amp; safety</p> | <p>Safety Precautions to be followed at site. Fire precautions causes and types of fire, precaution against outbreak of fire. Fire extinguisher types and uses. Proper centering erection, proper scaffolding making &amp; precautions to be taken while working at higher attitudes and during hot repair. Precautions to be followed in Gas hazardous area. Precaution during dismantling.</p>                                                                                                                                                                      |
| 2.       | <p>Use of protective devices like helmet, gloves, safety belts<br/>Use of fire fighting equipments.<br/>Familiarisation with different sections of RMHP.<br/>Visit to Hazardous areas of RMHP.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><b>Induction &amp; Safety Training</b><br/>Company Profile, Significance of Steel Business Plant familiarization, Layout, Product Mix, Objectives.<br/>Safety, Health &amp; Environment Awareness<br/>Basic skill development training on Use of Tools, Basic Measuring Instruments, Coupling &amp; Alignment, Welding, Gas Cutting.<br/><b>Overview of RMHP &amp; Related Safety Aspects</b><br/>a. Quality parameters of Raw Materials<br/>b. Price of Raw Materials<br/>c. General idea and pricing of spares<br/>d. Types of material conveying equipments</p> |
| 3.       | Control desk for Wagon Tippler &                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Tippling of Wagons</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Operator Material Handling at Raw Material Handling Plant

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|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Pusher Cars<br>Shift take-over<br>Pre-start checks d. Start-up<br>Tippling on manual mode<br>Placement of loaded wagon on tippler<br>Tippling<br>Closing down<br>Post job checks<br>Equipment safety<br>Stoppage on emergency / power failure j.<br>House-keeping | a. Introduction to Wagon Tippler <ol style="list-style-type: none"> <li>Various types</li> <li>Function &amp; Identification of the main units of the equipment</li> </ol> b. Introduction to Side Arm Charger <ol style="list-style-type: none"> <li>Various types</li> <li>Function &amp; Identification of the main units of the equipment</li> </ol> c. Introduction to Pusher Cars <ol style="list-style-type: none"> <li>Various types</li> <li>Function &amp; Identification of the main units of the equipment</li> </ol> d. Drives of Tipplers, Side Arm Charger & Pusher Cars<br>e. Limit Switches of Tipplers, Side Arm Charger & Pusher Cars<br>f. Concept of wagon Demurrage and measures for controlling<br>g. Log Book Entry<br>h. Equipment specific safety        |
| 4. | Practice on brick laying. (Forming curves)                                                                                                                                                                                                                        | <b>Stacking of Raw Materials</b> <ol style="list-style-type: none"> <li>Introduction to Stacker cum Reclaimer</li> <li>Function &amp; Identification of the main units of the equipment</li> <li>Introduction to Slewable Stacker</li> <li>Function &amp; Identification of the main units of the equipment</li> <li>Introduction to Wing Trippers</li> <li>Function &amp; Identification of the main units of the equipment</li> <li>Drives of Stacker cum Reclaimers, Wing Trippers &amp; Slewable Stackers.</li> <li>Limit Switches of Stacker cum Reclaimers, Wing Trippers &amp; Slewable Stackers.</li> <li>Types of Stacking</li> <li>Bed Preparation techniques – Averaging &amp; Blending</li> <li>Log Book Entry</li> <li>General safety and conveyor safety.</li> </ol> |
| 5  | <b>Video demo of the related processes</b>                                                                                                                                                                                                                        | <b>Reclaiming of Raw Materials</b> <ol style="list-style-type: none"> <li>Introduction to Stacker cum Reclaimer</li> <li>Function &amp; Identification of the main units of the equipment</li> <li>Introduction to Blender Reclaimer</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Operator Material Handling at Raw Material Handling Plant

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|---|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                                        | <ul style="list-style-type: none"> <li>d. Function &amp; Identification of the main units of the equipment</li> <li>e. Introduction to Barrel Reclaimer</li> <li>f. Function &amp; Identification of the main units of the equipment</li> <li>g. Introduction to Scraper Reclaimer</li> <li>h. Function &amp; Identification of the main units of the equipment</li> <li>i. Drives of Stacker cum Reclaimers, Blender, Barrel &amp; Scraper Reclaimers</li> <li>j. Limit Switches of Stacker cum Reclaimers, Blender, Barrel &amp; Scraper Reclaimers</li> <li>k. Reclaiming Methods</li> <li>l. Log Book Entry</li> <li>m. Concept of Blending &amp; Averaging</li> </ul> |
| 6 | <b>Video demo of the related processes</b>             | <b>Screening</b> <ul style="list-style-type: none"> <li>a. Introduction to Iron Ore Screens</li> <li>b. Function &amp; Identification of the main units of the equipment</li> <li>c. Introduction to Flux Screens</li> <li>d. Function &amp; Identification of the main units of the equipment</li> <li>e. Drives of Screens</li> <li>f. Log Book Entry</li> <li>g. General safety</li> </ul>                                                                                                                                                                                                                                                                              |
| 7 | <b>Video demo of the related processes</b>             | <b>Flux Crushing</b> <ul style="list-style-type: none"> <li>a. Introduction to Flux Crushers</li> <li>b. Function &amp; Identification of the main units of the equipment</li> <li>c. Drives of Crushers</li> <li>d. Input Materials</li> <li>e. Closed circuit operation</li> <li>f. Log Book Entry</li> <li>g. General safety</li> </ul>                                                                                                                                                                                                                                                                                                                                 |
| 8 | Practice on brick laying.(Involving different profile) | <b>Coke Crushing</b> <ul style="list-style-type: none"> <li>a. Introduction to Coke Crushers</li> <li>b. Function &amp; Identification of the main units of the equipment</li> <li>c. Drives of Crushers</li> <li>d. Input Materials</li> <li>e. Procedure for gap adjustment with SOP's.</li> <li>f. Log Book Entry</li> <li>g. General safety</li> </ul>                                                                                                                                                                                                                                                                                                                 |
| 9 | <b>video demo of the related skills</b>                | <b>Track Hopper Operation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## Operator Material Handling at Raw Material Handling Plant

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|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                     | <ul style="list-style-type: none"> <li>a. Introduction to Track Hoppers <ul style="list-style-type: none"> <li>i. Technical data</li> <li>ii. Design features</li> <li>iii. Sketch of Paddle Feeders</li> </ul> </li> <li>b. Drives of Paddle Feeders</li> <li>c. Input Materials</li> <li>d. Distribution of Bunkers in Track Hoppers</li> <li>e. Log Book Entry</li> <li>f. General safety</li> </ul>                                                                                                                                                                                                                                                                               |
| 10 | <b>video demo of the related skills</b>                                                                                                             | <b>Highline Operation</b> <ul style="list-style-type: none"> <li>a. Introduction to Tripper Cars</li> <li>b. Function &amp; Identification of the main units of the equipment</li> <li>c. Drives of Tripper Cars</li> <li>d. Input Materials</li> <li>e. Distribution of Bunkers in Highline</li> <li>f. Log Book Entry</li> <li>g. General safety</li> </ul>                                                                                                                                                                                                                                                                                                                         |
| 11 | <b>video demo of the related skills</b><br><br><b>All safety devices of conveyor.</b>                                                               | <b>Operation of Conveyors</b> <ul style="list-style-type: none"> <li>a. Introduction to Conveying Systems <ul style="list-style-type: none"> <li>i. Types of conveyors</li> <li>ii. Design features</li> <li>iii. Weigh Feeders</li> </ul> </li> <li>b. Drives of conveyors</li> <li>c. Transfer of material from one conveyor to another</li> <li>d. General layout of conveyors</li> <li>e. Various parts of a conveyor</li> <li>f. Conveyor related safety aspects</li> <li>g. Monsoon Hazards &amp; Preparations</li> <li>h. General safety</li> </ul>                                                                                                                            |
| 12 | <b>Video demo of all safety devices in conveyor belt system</b><br><br><b>Video demo of types of joints (cold, hot &amp; mechanical fastening.)</b> | <b>Operation of Pollution Control Equipments</b> <ul style="list-style-type: none"> <li>a. Introduction to Pollution Control Systems <ul style="list-style-type: none"> <li>i. Dry Fog Dust Suppression Systems</li> <li>ii. Tippler &amp; Highline Sprinklers</li> <li>iii. Dust Extraction Systems</li> </ul> </li> <li>b. General layout</li> <li>c. Log Book Entry</li> <li>d. General safety</li> </ul> <b>Operation of Fire Fighting Equipments &amp; General Safety</b> <ul style="list-style-type: none"> <li>a. Introduction to Fire Fighting System <ul style="list-style-type: none"> <li>i. Types of Fire Extinguishers</li> <li>ii. Fire Hydrants</li> </ul> </li> </ul> |

## Operator Material Handling at Raw Material Handling Plant

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|----|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                               | <ul style="list-style-type: none"><li>b. General Safety<ul style="list-style-type: none"><li>i. Use of PPE</li><li>ii. Rail &amp; Road Safety</li><li>iii. Safe Working Practices</li><li>iv. Working at Heights</li></ul></li></ul> |
| 13 | Revision& Internal Assessment |                                                                                                                                                                                                                                      |

**Note:** - More emphasis to be given on video/real-life pictures during theoretical classes. Some real-life pictures/videos of related industry operations may be shown to the trainees to give a feel of Industry and their future assignment.



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## 9. SYLLABUS - CORE SKILLS

### 9.1 WORKSHOP CALCULATION SCIENCE & ENGINEERING DRAWING

| Block – I |                                                                                                                                                                                                           |                                                                                                                                                                                                 |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sl. No.   | Workshop Calculation and Science<br>(Duration: - 20 hrs.)                                                                                                                                                 | Engineering Drawing<br>(Duration: - 30 hrs.)                                                                                                                                                    |
| 1.        | Applied workshop problems involving simple addition, subtraction, multiplication, division and common fractions.                                                                                          | Introduction to Engineering drawing, its importance and uses in engineering fields. Simple definitions of Points, Lines, Parallel straight lines.                                               |
| 2.        | Science- Definition, Nomenclature, various branches, significance and definitions of important terms.                                                                                                     | Geometrical construction of Square, Rectangle, Triangle, Circle, Polygons, etc.                                                                                                                 |
| 3.        | Rounding of decimal values, use of approximation.                                                                                                                                                         | Drawing different types of lines.                                                                                                                                                               |
| 4.        | Units – Definition, fundamental & derived units, system of units- FPS, CGS, MKS and SI units of some important parameters- Length , mass, time, density, current, voltage, pressure etc. Unit conversion. | Free hand sketch of Hand tools used in the trade.                                                                                                                                               |
| 5.        | Workshop problems related to average.                                                                                                                                                                     | Screw Threads – Forms of Various Screw threads used in general in the industry – Nomenclature, convention                                                                                       |
| 6.        | Workshop problems related to percentage.                                                                                                                                                                  | Fastening Devices – Temporary and Permanent. Meaning and difference. Temporary Device – Hexagonal Bolt, Nut, Check Nut, Washer.                                                                 |
| 7.        | Workshop problems related to ratio and proportion.                                                                                                                                                        | Different Methods of Preventions of rotation of Bolts - Check nut, Square headed bolt, Square headed bolt with square neck, cup headed bolt, Eye bolt, counter sunk headed bolt, rag bolt, etc. |
| 8.        | Workshop problems related on time & work.                                                                                                                                                                 | Different Methods of locking of nuts :- a) Lock nuts, b) Split pin, c) Slotted nut, d) Symmonds nut, e) Castle nut, f) Wings nut, etc.                                                          |
| 9.        | Profit & Loss and problems concerning to workshop practices.                                                                                                                                              | Permanent Fastening Devices- Rivets – different parts and their types Different types of rivet heads.                                                                                           |
| 10.       | Properties of Matter- Different types of Properties of Matter e.g. Mechanical, Electrical, Chemical,                                                                                                      | Rivets Joints – Lap joint and Butt or Strap joint.<br>Lap Joint – a) Single Riveted, b) Double                                                                                                  |

## Operator Material Handling at Raw Material Handling Plant

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|     | Magnetic.                                                                                                                                                                     | riveted, i) Chain, ii) zig – zag<br>Butt Joint – a) Single plate or strap, b) Double plate or strap |
| 11. | Properties of Matter (Mechanical) - Tenacity, Toughness, Malleability, Ductility, Elasticity, Plasticity, Brittleness, Hardness (concept & definition)                        | Keys and Cotter Joints, Difference between Keys and Cotters, Different types of Keys.               |
| 12. | Properties and uses of copper, zinc, lead, tin, aluminum, brass, bronze, solder, bearing metals, timber, and rubber.                                                          | ---                                                                                                 |
| 13. | Engineering Material- Introduction, classification, Metallic- Non metallic material, physical and mechanical properties,                                                      | ---                                                                                                 |
| 14. | Heat & temperature- Definition and its importance. Scales of Temperature, e.g. Fahrenheit, Centigrade, Kelvin-relationship between them.                                      | ---                                                                                                 |
| 15. | Transmission of heat- Conduction, Convection and Radiation. Examples from Industries (concept & definition)                                                                   | ---                                                                                                 |
| 16. | Transmission of Power and motion of Belt and Pulleys:- Driver and Follower – Open and Cross belt system of belt drives. Velocity ratio. Power Transmission by belt – Problems | ---                                                                                                 |

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**9.2 EMPLOYABILITY SKILLS**

Duration- 55 HRS.

| Topic No. | Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Duration (in hours) |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|           | <b>English Literacy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>7</b>            |
| <b>1.</b> | <b>Reading</b><br>Reading and understanding simple sentences about self, work and environment                                                                                                                                                                                                                                                                                                                                                                                                       |                     |
| <b>2.</b> | <b>Writing</b><br>Construction of simple sentences Writing simple English                                                                                                                                                                                                                                                                                                                                                                                                                           |                     |
| <b>3.</b> | <b>Speaking / Spoken English</b><br>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. 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>I.T. Literacy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>10</b>           |
| <b>1.</b> | <b>Basics of Computer</b><br>Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.                                                                                                                                                                                                                                                                                                                                            |                     |
| <b>2.</b> | <b>Word processing and Worksheet</b><br>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.<br>Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.<br>Use of External memory like pen drive, CD, DVD etc. |                     |
| <b>3.</b> | <b>Computer Networking and INTERNET</b><br>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.                                                                                                                                                                                                                                                                                         |                     |
|           | <b>Communication Skill</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>18</b>           |
| <b>1</b>  | <b>Introduction to Communication Skills</b><br>Communication and its importance<br>Principles of Effective communication<br>Types of communication - verbal, nonverbal, written, email, talking on phone. Nonverbal communication - components-Para-language<br>Body - language                                                                                                                                                                                                                     |                     |

## Operator Material Handling at Raw Material Handling Plant

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|           | Barriers to communication and dealing with barriers.                                                                                                                                                                                                                 |          |
| <b>2</b>  | <b>Listening Skills</b><br>Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening.                                                                                                                 |          |
| <b>3</b>  | <b>Motivational Training</b><br>Characteristics Essential to Achieving Success<br>The Power of Positive Attitude<br>Self awareness<br>Importance of Commitment<br>Ethics and Values<br>Ways to Motivate Oneself<br>Personal Goal setting and Employability Planning. |          |
| <b>4</b>  | <b>Facing Interviews</b><br>Manners, Etiquettes, Dress code for an interview<br>Do's & Don'ts for an interview                                                                                                                                                       |          |
|           | <b>Entrepreneurship skill</b>                                                                                                                                                                                                                                        | <b>8</b> |
| <b>1.</b> | <b>Concept of Entrepreneurship</b><br>Entrepreneurship- Entrepreneurship - Enterprises:-Conceptual issue.<br>Source of business ideas, Entrepreneurial opportunities, The process of setting up a business.                                                          |          |
| <b>2.</b> | <b>Institutions Support</b><br>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.     |          |
|           | <b>Productivity</b>                                                                                                                                                                                                                                                  |          |
| <b>1.</b> | <b>Productivity</b><br>Definition, Necessity.                                                                                                                                                                                                                        |          |
| <b>2.</b> | <b>Affecting Factors</b><br>Skills, Working Aids, Automation, Environment, Motivation<br>How improves or slows down.                                                                                                                                                 |          |
| <b>3.</b> | <b>Personal Finance Management</b><br>Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.                                                                                                                            |          |
|           | <b>Occupational Safety, Health &amp; Environment Education</b>                                                                                                                                                                                                       | <b>6</b> |
| <b>1</b>  | <b>Safety &amp; Health</b><br>Introduction to Occupational Safety and Health importance of safety and health at workplace.                                                                                                                                           |          |
| <b>2</b>  | <b>Occupational Hazards</b><br>Basic Hazards, Chemical Hazards, Vibro-acoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.                      |          |

## **Operator Material Handling at Raw Material Handling Plant**

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| <b>3</b>  | <b>Accident &amp; safety</b><br>Basic principles for protective equipment.<br>Accident Prevention techniques - control of accidents and safety measures.                                                                                                                     |          |
| <b>4</b>  | <b>First Aid</b><br>Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person                                                                                                                                                                      |          |
|           | <b>Labour Welfare Legislation</b>                                                                                                                                                                                                                                            |          |
| <b>1</b>  | <b>Welfare Acts</b><br>Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Employees Provident Fund Act.                                                                                                         |          |
|           | <b>Quality Tools</b>                                                                                                                                                                                                                                                         | <b>6</b> |
| <b>1.</b> | <b>Quality Consciousness :</b><br>Meaning of quality, Quality Characteristic                                                                                                                                                                                                 |          |
| <b>2.</b> | <b>Quality Circles :</b><br>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. |          |
| <b>3.</b> | <b>House Keeping :</b><br>Purpose of Housekeeping, Practice of good Housekeeping.                                                                                                                                                                                            |          |
| <b>4.</b> | <b>Quality Tools</b><br>Basic quality tools with a few examples                                                                                                                                                                                                              |          |

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## **10. DETAILS OF COMPETENCIES (ON-JOB TRAINING)**

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The **competencies/ specific outcomes** on completion of On-Job Training are detailed below: -

### **Block – I**

#### **1. Overview of RMHP & Related Safety Aspects –**

- Use of protective devices like helmet, gloves, safety belts
- Use of fire fighting equipments
- Familiarisation with different sections of RMHP
- Visit to Hazardous areas of RMHP

#### **2. Tippling of Wagons –**

- Control desk for Wagon Tippler & Pusher Cars
- Shift take-over
- Pre-start checks (with check list)
- Start-up
- Tippling on manual mode
  - Placement of loaded wagon on tippler
  - Tippling



- Closing down
- Post job checks
- Equipment safety
- Stoppage on emergency / power failure
- House-keeping

#### **3. Stacking of Raw Materials -**

- Control desk of Stacker cum Reclaimers, Wing Trippers & Slewable Stackers.
- Shift take-over
- Pre-start checks
- Start-up
  - i. Stacking
  - ii. Running checks
  - iii. Bed formation
- Closing down
- Post job checks
- Shutdown preparations
- Equipment safety
- Stoppage on emergency / power failure
- House-keeping

#### **4. Reclaiming of Raw Materials –**

- Control desk of Stacker cum Reclaimers, Blender, Barrel & Scraper Reclaimers
- Shift take-over
- Pre-start checks
- Start-up

## ***Operator Material Handling at Raw Material Handling Plant***

- i. Reclaiming
  - ii. Running checks
  - Closing down
  - Post job checks
  - Shutdown preparations
  - Equipment safety
  - Stoppage on emergency / power failure
  - House-keeping
5. **Screening –**
- Shift take-over
  - Pre-start checks
  - Start-up
    - i. Running checks
  - Closing down
  - Post job checks
  - Shutdown preparations
  - Equipment safety
  - Stoppage on emergency / power failure
  - House-keeping
6. **Flux Crushing –**
- Shift take-over
  - Pre-start checks
  - Trial run
    - i. Vibration checks
    - ii. Bearing Temperature checks
    - iii. Grinding wall Adjustments
    - iv. Vibro Feeder check for abnormal material discharge
  - Start-up
  - Running checks
    - i. Material feed rate adjustments
  - Closing down/Stopping Procedures
  - Post job checks
  - Shutdown preparations
  - Equipment safety
  - Stoppage on emergency / power failure
  - House-keeping
7. **Coke Crushing –**
- Shift take-over
  - Pre-start checks
    - i. Roll gap adjustments
  - Trial run
    - i. Abnormal sound checks



## ***Operator Material Handling at Raw Material Handling Plant***

- ii. Bearing Temp checks
- iii. Vibro feeder check for abnormal material discharge
- Start-up
- Running checks
  - i. Material feed rate adjustments
- Closing down
- Post job checks
- Shutdown preparations
- Equipment safety
- Stoppage on emergency / power failure
- House-keeping
- V-belt adjustment.

### **8. Track Hopper Operation –**

- Shift take-over
- Pre-start checks
- Trial run
- Start-up
- Running checks
  - i. Material feed rate adjustments
- Closing down
- Post job checks
- Shutdown preparations
- Equipment safety
- Stoppage on emergency / power failure
- House-keeping



### **9. Highline Operation –**

- Shift take-over
- Pre-start checks
- Trial run
- Start-up
- Running checks
  - i. Bunker level
- Closing down
- Post job checks
- Shutdown preparations
- Equipment safety
- Stoppage on emergency / power failure
- House-keeping

### **10. Operation of Conveyors –**

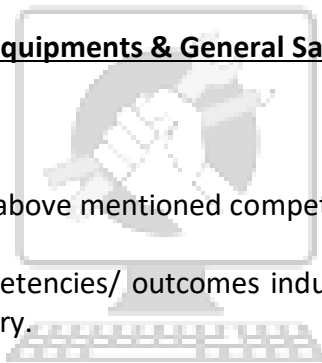
- Shift take-over
- Pre-start checks
- Running checks
  - i. Feed adjustments

## ***Operator Material Handling at Raw Material Handling Plant***

- ii. Tracking of conveyors
  - iii. Spillage prevention
  - Closing down
  - Shutdown preparations
  - Equipment safety
  - Stoppage on emergency / power failure
  - House-keeping
11. **Operation of Pollution Control Equipments –**
- Pre-start checks
  - Running checks
  - Closing down
  - Shutdown preparations
  - Equipment safety
12. **Operation of Fire Fighting Equipments & General Safety –**
- On job practices

### **Note:**

1. Industry must ensure that above mentioned competencies are achieved by the trainees during their on job training.
2. In addition to above competencies/ outcomes industry may impart additional training relevant to the specific industry.



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**INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE**

| <b>OPERATOR MATERIAL HANDLING EQUIPMENTS AT RAW MATERIAL HANDLING PLANT</b>                                 |                                                             |                      |                 |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------|-----------------|
| <b>LIST OF TOOLS AND EQUIPMENT for Basic Training (For 20 Apprentices)</b>                                  |                                                             |                      |                 |
| <b>A. TRAINEES TOOL KIT ( For each additional unit trainees tool kit Sl. 1-18 is required additionally)</b> |                                                             |                      |                 |
| <b>Sl. no.</b>                                                                                              | <b>Name of the Tool &amp; Equipments</b>                    | <b>Specification</b> | <b>Quantity</b> |
| 1                                                                                                           | As per training need the tools & equipment may be procured. |                      |                 |
| <b>B : INSTRUMENTS &amp; GENERAL SHOP OUTFIT</b>                                                            |                                                             |                      |                 |
| 2                                                                                                           | As per training need the tools & equipment may be procured. |                      |                 |
| <b>GENERAL SHOP OUTFIT</b>                                                                                  |                                                             |                      |                 |
| 3                                                                                                           | As per training need the tools & equipment may be procured. |                      |                 |

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## ***Operator Material Handling at Raw Material Handling Plant***

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

#### **TRADE: OPERATOR MATERIAL HANDLING EQUIPMENTS AT RAW MATERIAL HANDLING PLANT**

#### **LIST OF TOOLS& EQUIPMENTS FOR -20APPRENTICES**

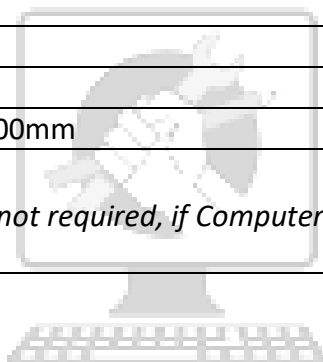
1) **Space Norms** : 45 Sq. m.(For Engineering Drawing)

2) **Infrastructure:**

| <b>A : TRAINEES TOOL KIT:-</b> |                                    |                      |                 |
|--------------------------------|------------------------------------|----------------------|-----------------|
| <b>Sl. No.</b>                 | <b>Name of the items</b>           | <b>Specification</b> | <b>Quantity</b> |
| 1.                             | Draughtsman drawing instrument box |                      | 20+1 set        |
| 2.                             | Set square celluloid 45°           | (250 X 1.5 mm)       | 20+1 set        |
| 3.                             | Set square celluloid 30°-60°       | (250 X 1.5 mm)       | 20+1 set        |
| 4.                             | Mini drafter                       |                      | 20+1 set        |
| 5.                             | Drawing board IS: 1444             | (700mm x500 mm)      | 20+1 set        |
| <b>B : Furniture Required</b>  |                                    |                      |                 |
| <b>Sl. No.</b>                 | <b>Name of the items</b>           | <b>Specification</b> | <b>Quantity</b> |
| 1                              | Drawing Board                      |                      | 20              |
| 2                              | Models : Solid & cut section       |                      | as required     |
| 3                              | Drawing Table for trainees         |                      | as required     |
| 4                              | Stool for trainees                 |                      | as required     |
| 5                              | Cupboard (big)                     |                      | 01              |
| 6                              | White Board (size: 8ft. x 4ft.)    |                      | 01              |
| 7                              | Trainer's Table                    |                      | 01              |
| 8                              | Trainer's Chair                    |                      | 01              |

## ***Operator Material Handling at Raw Material Handling Plant***

| <b>TOOLS &amp; EQUIPMENTS FOR EMPLOYABILITY SKILLS</b>                                                   |                                                                                                                                                    |                 |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Sl. No.</b>                                                                                           | <b>Name of the Equipment</b>                                                                                                                       | <b>Quantity</b> |
| <b>1.</b>                                                                                                | Computer (PC) with latest configurations and Internet connection with standard operating system and standard word processor and worksheet software | 10 Nos.         |
| <b>2.</b>                                                                                                | UPS - 500VA                                                                                                                                        | 10 Nos.         |
| <b>3.</b>                                                                                                | Scanner cum Printer                                                                                                                                | 1 No.           |
| <b>4.</b>                                                                                                | Computer Tables                                                                                                                                    | 10 Nos.         |
| <b>5.</b>                                                                                                | Computer Chairs                                                                                                                                    | 20 Nos.         |
| <b>6.</b>                                                                                                | LCD Projector                                                                                                                                      | 1 No.           |
| <b>7.</b>                                                                                                | White Board 1200mm x 900mm                                                                                                                         | 1 No.           |
| <i>Note: - Above Tools &amp; Equipments not required, if Computer LAB is available in the institute.</i> |                                                                                                                                                    |                 |



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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:                    |                                 |                        |                      |                   |                         |                                                 |                          |                                    |                             |                     |                        |                                 |              |
| Sl. 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                                    |                                 |                        |                      |                   |                         |                                                 |                          |                                    |                             |                     |                        |                                 |              |