OFFSET MACHINE MINDER

COMPETENCY BASED CURRICULUM

(Duration: 2 Yrs.)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 5

SECTOR – PRODUCTION & MANUFACTURING

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

OFFSET MACHINE MINDER

(Revised in 2018)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL - 5

Developed By

Ministry of Skill Development and Entrepreneurship
Directorate General of Training
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
EN-81, Sector-V, Salt Lake City,
Kolkata – 700 091

ACKNOWLEDGEMENT

The DGT sincerely expresses appreciation for the contribution of the Industry, State Directorate, Trade Experts and all others who contributed in revising the curriculum. Special acknowledgement to the following industries/organizations who have contributed valuable inputs in revising the curricula through their expert members:

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

Co-ordinator for the course: Shri…….

List of member is attended the Trade Committee Meeting for revising the Syllabus for the Trade of Off Set Machine blinder under CTS/ATS held on 12.05.2005

SL. No.	Name S/Sri	Designation / Representing Org.	Remarks
1	M Lingaiah	Director, CSTARI	Chairman
2	R. M Sinha	Ex-Jt. Director, CSTARI	Member
3	Surendra B. Dhote	Bharat Lithographic Co. Ltd. Kol	Member
4	P. K De	The Times of India, Kolkata—9 I	Member
5	Bisvanath Chakravarty	J. Mahabeer & Co. Kolkata-20	Member
6	S. K Moidal	Dy. Supdt. Got t. Press, Kolkata	Member
7	S. Mukherjee	Hooghly Printing Co. Ltd	Member
8	Hiralal Bhattacharjee	HMT Ltd. , Kolkata	Member
9	Sandip Mukherjee	14MT Machine Tools Ltd. , Kolkata	Member
10	T.K. Saha	14MT Machine Tools Ltd. , Kolkata	Member
11	Uttam Datta	Principal, ITI Idowrah homes	Member
12	Arabinda Banerjee	Instructor, ITI Hov rah homes	Member
13	Sukanta	ITI I4oivrah Homes	Member
14	T. Mukhopadliyah	Dy.Director, CSTARI	Member
15	S. Kumar	Deputy Director, CSTARI	Member
16	A. Chakrabarti	Asstt. Director	Member
17	A.K. Patra,	Trg officer, CSTARI	Member
18	S.C. Poddar	Trg officer, CSTARI	Member
19	S.B. Sardar	Trg officer, CSTARI	Member
20	N. SenGupta	RDAT , Kolkata	Member

Offset Machine Minder

List of members attended the Review Trade Committee Meeting for revising the Syllabus for the Trade of "Off Set Machine Minder" under CTS/ATS held on 08. 09. 2005 at CSTARI Conference Hall Salt Lake Kolkata.

Sl. No.	Name of Member & Designation S/Sri	Representing Organization with full address	Remarks
1.	M.M. Gera, DDT	CSTARI, Salt lake	Chairman
2.	Dr. Kanai Ch Paul, Reader	Deptt of Printing Engg, Jadavpur University, Saltlake Campus, Kol – 98	Member
3.	Prof. A.K. Pal, Professor	Deptt, of Printing Engg, Jadavpur University.	Member
4.	Prof. N.R. Pal	Elect. & Commu Sc. Unit, ISI, Kol	Member
5.	P. K. De, Chief Manager (T.O.I)	The Times of India Bennett Coleman & Co Ltd.	Member
6.	Abhijit Das	Contemporary Equipment & Enterprise P Ltd. 119A Ripon street Kolkata -700016	Member
7.	T. Mukhopadhayay, DDT	CSTARI, Salt lake	Member
8.	A. Chakraborti ADT.	CSTARI Kol-91	Member
9.	V. Basu , ADT.	CSTARI Kol-91	Member
10.	A.K. Patra, T.O.	CSTARI Kol-91	Member
11.	S.C. Poddar, T.O.	CSTARI Kol-91	Member

CONTENTS

1. BACKGROUND

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 22nd December, 2014 to make it more responsive to industry and youth. Key amendments are as given below:

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

2. TRAINING SYSTEM

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.

Offset Machine Minder trade under ATS is one of the courses delivered nationwide through different industries. The course is of two years (02 Blocks) 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.

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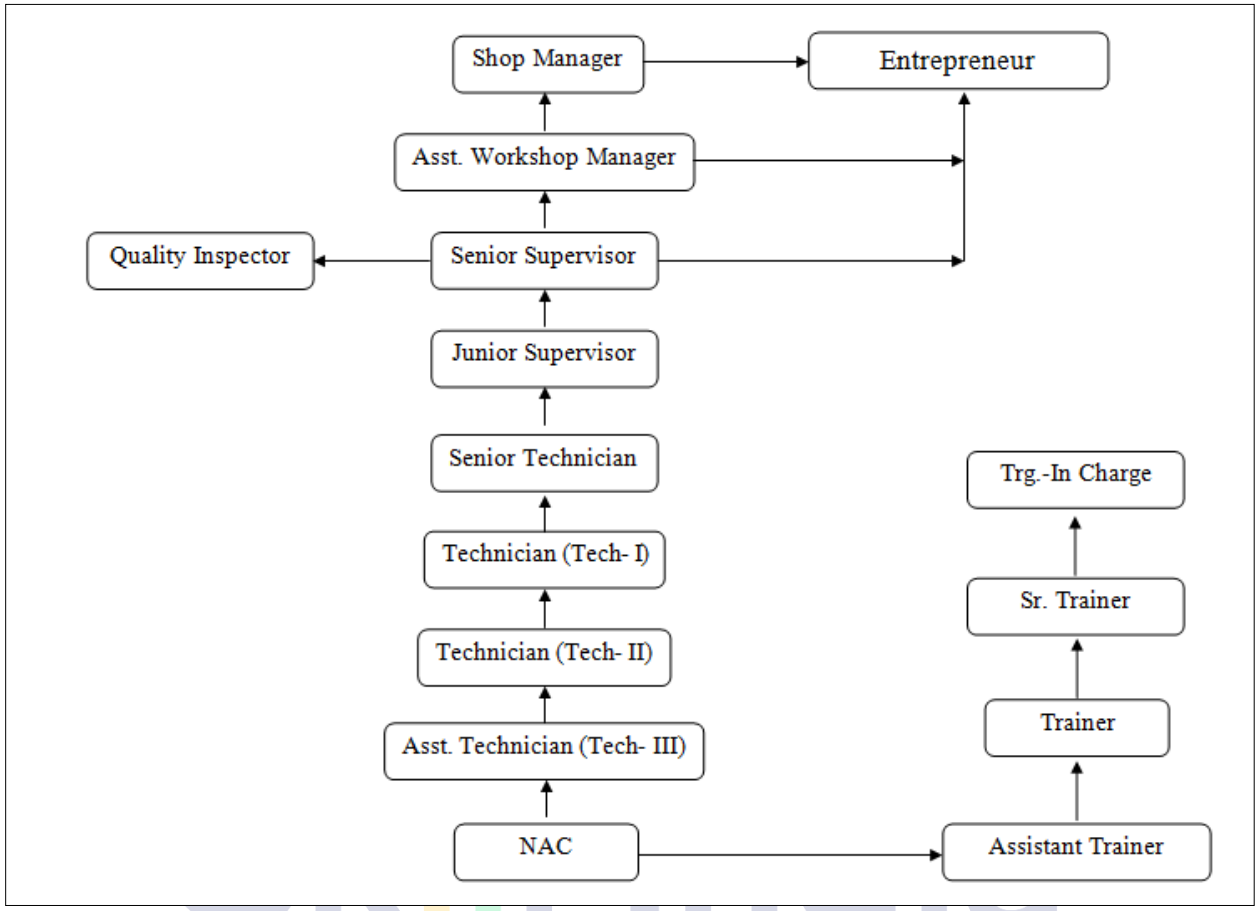
2.2 CAREER PROGRESSION PATHWAYS:

- 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 two years (*Basic Training and On-Job Training*): -

Total training duration details: -

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

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A. Basic Training

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

For 01 yr. course (Engg.) :-(**Total 03 months:** 03 months in 1st 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
	Total (Including internal assessment)	**1000**	**500**

B. On-Job Training:-

For 02 yrs. Course (Engg.) :-(**Total 18 months:** 09 months in 1st yr. + 09 months in 2nd 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
For 02 yrs. course (Engg.)	1000 hrs.	3120 hrs.	4120 hrs.
For 01 yr. course (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

institute have to maintain individual trainee portfolio as detailed in assessment guideline (section-2.4.2). 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 (section-2.4.2) 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:

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Performance Level	Evidence
(a) Weightage in the range of 60 -75% to be allotted during assessment	
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.	• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment • Below 70% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A fairly good level of neatness and consistency in the finish • Occasional support in completing the project/job.
(b) Weightage in the range of above75% - 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.	• Good skill levels in the use of hand tools, machine tools and workshop equipment • 70-80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A good level of neatness and consistency in the finish • Little support in completing the project/job
(c) Weightage in the range of above 90% to be allotted during assessment	
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.	• High skill levels in the use of hand tools, machine tools and workshop equipment • Above 80% tolerance dimension/accuracy achieved while undertaking different work with those demanded by the component/job/set standards. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

3. JOB ROLE

Brief description of Job roles:

Operates offset printing press in which the impression from plate is first received on rubber blanket and then transferred to paper. Washes plate with chemical solutions to render non-image portions ink-repellent and to ensure clear impression. Clamps plates firmly on cylinder, places paper roll on automatic feeding stand and fills ink in fountain in machine. Runs machine for printing. Regulates speed of machine and ensures uniformity of ink and impression. Supervises work of inkers. Cleans and oils machine.

Offset machine minder carry out the handling, care and maintenance of printing machines, setting the offset printing machine, wash-up rollers, hand and mechanical, multi colour work, printing of single units, multi unit machine, bronzing varnishing, metal printing etc. Practice U.V. & acquits coating in ornamentation, paper graining and embossing, adjust and lay the greepers like cylinder greepers, delivery greepers, and swing greepers, select the plate for surface and deep-etch processes, Select the offset blanket, set rollers, inking and dampening, measure pH treatment and control, control the temperature and relative humidity for printing, selection of ink for printing, lubricate the printing machines, maintenance of printing machine and other equipment in a Machine room, keeping of docket and output records.

NCO Code 2015: 7322.2100 - Machine man, offset printing

4. NSQF LEVEL COMPLIANCE

NSQF level for Offset Machine Minder trade under ATS: **Level 5**

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 Offset Machine Minder trade under ATS mostly matches with the Level descriptor at Level- 5.

The NSQF level-5 descriptor is given below:

Level	Process Required	Professional Knowledge	Professional Skill	Core Skill	Responsibility
Level 5	Job that requires well developed skill, with clear choice of procedures in familiar context.	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problem by selecting and applying basic methods, tools, materials and information.	Desired mathematical skill, understanding of social, political and some skill of collecting and organizing information, communication.	Responsibility for own work and Learning and some responsibility for other's works and learning.

5. GENERAL INFORMATION

Name of the Trade	OFFSET MACHINE MINDER
NCO-2015	**7322.2100 -**Machine man, offset printing
NSQF Level	Level – 5
Duration of Apprenticeship Training (Basic Training + On-Job Training)	Two years (02 Blocks each of one year duration).
Duration of Basic Training	a) Block –I : 3 months b) Block – II : 3 months **Total duration of Basic Training: 6 months**
Duration of On-Job Training	a) Block–I: 9 months b) Block–II : 9 months **Total duration of Practical Training: 18 months**
Entry Qualification	Passed 10th class examination under 10+2 system of education or its equivalent.
Selection of Apprentices	The apprentices will be selected as per Apprenticeship Act amended time to time.
Instructors Qualification for Basic Training	As per ITI instructors qualifications as amended time to time for the specific trade.
Infrastructure for Basic Training	As per related trade of ITI
Examination	The internal examination/ assessment will be held on completion of each block. Final examination for all subjects will be held at the end of course and same will be conducted by NCVT.
Rebate to Ex-ITI Trainees	One year
CTS trades eligible for Offset Machine Minder Apprenticeship	Offset Machine Minder

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

6.1 GENERIC LEARNING OUTCOME

The following are minimum broad Common Occupational Skills/ Generic Learning Outcome after completion of the Offset Machine Minder course of 02 years duration under ATS.

Block I & II:-

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, 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 & 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. Identify best safety and basic Industrial Culture (5S, KAIZEN and TS/ISO/OSHE.
2. Prepare documentation as per industrial need by different methods of recording information.
3. Perform handling, care and maintenance of machines like sheet fed & web and other equipment of room, materials, lubrication, Overhauling, follows the correct working posture and dress code.
4. Prepare machine, carry out proofing – press, offset printing machine, fix the plate,

rubber, blanket, setting the inking and dampening systems, regulation of ink and water supply.

5. Set the operation of automatic feeder, sheet fed & web.
6. Identify, explain the Set-off, its causes, and their remedies and practice the use of anti-set-off (spray) equipment of various kinds.
7. Carry out machine operation, setting the lays, feeding, delivery adjustment, and troubleshoot the running problems and apply remedies.
8. Work on wash-up rollers, hand and mechanical; maintain the roller web & sheet fed.
9. Mix and colour matching of inks.
10. Carry out multi colour work, printing of single units, multi unit machine, perfectos, sequence of printing of colour, line and half tone work, set-on-wet printing and miscellaneous work on printing machine like bronzing varnishing, metal printing etc. Set U.V. & acquits coating in ornamentation, paper graining and embossing.
11. Identify and set sp. accessories – I.R. driers, chillers, Alcohol dozing used in offset printing machine.
12. Identify use of various types of sub spares, e.g. paper, foil laminated board, foams, and P.V.C materials.
13. Identify and classify cylinders like plate cylinder, blanket cylinder & impression cylinder and adjust the parameters. Adjust and lay the greepers like cylinder greepers, delivery greepers, and swing greepers.
14. Adjust the front & side lays. Select the plate for surface and deep-etch processes, multi metal plate, anodized plates, pre-sensitised plates, their preparation, properties and use, practice handling and storage, carry out corrections, additions and deletions. Identify the chemicals and solution used in the printing machine- room, their preparation, handling care and storage, properties and use.
15. Select the offset blanket; explain their properties, care, handling and storage methods.
16. Classify and set rollers, inking and dampening kinds, identify the covering materials used for dampeners, their properties, handling, washing, care and storage.
17. Classify and set automatic feeders, explain the mechanical and operational features setting and carry out operation (Sheet fed & web)
18. Perform machine operation; identify running problems, causes and remedies. Carry out quality control and practice multi-colour printing sequence of printing of colours.

Block – II

19. Knowledge of imposition schemes, general and with relation to folding machine, simple and complex schemes up to 32 pages.
20. Define and measure pH, explain the effects of fountain solution, its treatment and control.

21. Explain the effect of temperature and relative humidity of plates and paper, practice the conditional handling control and explain the advantages of air-conditioning.
22. Explain the continuous tone, half tone, dot formation, its control and Size of dot and list the various screens and their use
23. Explain the brief outline paper manufacture, raw materials used, classification, properties and selection of paper for printing. Explain the grains of paper and governing factors for selection, the machine direction and its importance, and effects and neutralization of static electricity. Practice the handling and storage of printed & unprinted stock.
24. Identify the use of various types of sub spares like paper, foil laminated board, foams and PVC materials.
25. Explain the brief outline ink manufacture ,raw materials used, classification, properties and selection of ink for printing and their governing factors, Classify the driers, reducers and list their uses.
26. Explain the principles of colour additive and subtractive theories, mixing and practice machining colour
27. Classify and identify the lubricants and lubrication systems used on printing machines.
28. Explain the methods of transmission of power.
29. Carry out the preventive measure for Safety- Hazards in the trade.
30. Perform maintenance of printing machine and other equipment in a Machine room including cleaning, lubrication and overhauling.
31. Carry out keeping of docket and output records.
32. Prepare layout and plan machine room in the trade.
33. Identify and list out the modern development in offset printing Machinery, their features and other process- CTP etc
34. Identify and practice methods of elimination of wastages.

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.

electrical and apply in day to day work.*[Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, Centre of gravity, Power transmission, Pressure]*	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. *[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]*	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 them 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

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 recourses 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.
SPECIFIC OUTCOME	
Block- I & II (Section:10)	
*Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under **block – I & II** (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 **Planning** (Identify, ascertain, estimate etc.); **Execution** (perform, illustration, demonstration etc. by applying 1) a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information 2) Knowledge of facts, principles, processes, and general concepts, in a field of work or study 3)Desired Mathematical Skills and some skill of collecting and organizing information, communication) and **Checking/ Testing** to ensure functionality during the assessment of each outcome. The assessments parameters must also ascertain that the candidate is responsible for own work and learning and some responsibility for other's work and learning.*	

8. SYLLABUS

BASIC TRAINING (Block – I)

Duration: (03) Three Months

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1	Handling and care materials and equipment for surface deep etch plate and offset printing machine, dress, correct working posture	Brief history of printing, comparative analysis of different printing processes.
	Cleaning lubrication and general maintenance of machinery and equipment	Printing surface – outline of preparation for all processes
2	Printing surface – litho-stone, metals-zinc aluminum and copper, their care, handling and use.	Lithographic plate & printing machinery – outline of history and development.
	Outline of preparation for all processes, history and development	Photochemical process, classification, equipment & materials used for plant making and off-set printing
3	Lining-up table, layout sheets preparation and use	Lining –up table, layout sheets-handling and use
	Measuring gauges-Hydrometer, brume thermo-meter, densitometer etc, handling care and use	Measuring gauges hydrometer, hygrometer, densitometer etc, their handling care and use
4	Plates for surface and deep-etch processes-kinds, their care handling and use, pre-sensitized plates.	Plates-metals used – Aluminum, Zinc and copper, properties, their handling care and use pre-sensitized plate.
	Solutions for plate-making-surface and deep-etch plates- materials used, preparation and handling	Plate making-surface and deep-etch plates outline of chemicals and solutions used for plate making. coating of plate for light sensitivity-use of whirler
5	Physical condition of plate making room save light humidity, floor etc	Light souce-Kinds, exposure-printing-down frame use
	Graining of metal plates, equipment and care	Plate graining-equipment and materials used quality of the grain
6	Plate-making-Equipment and materials, whirler, Printing- down frame etc, their use	Proof and transfer presses-kinds, mechanical and operational features, hand transferring of images
7	Principle of plate making	Printing machine for litho-offset printing-kinds, mechanical and operational

		feature, inking & dampening system
8	Exposure. Image formation treatment and control	Simple imposing schemes with relation to folding scheme.
	Proofing press – Handling and care, proofing, nap roller-preparation and treatment	Rollers – Kinds, Setting, cleaning, handling & storage, pap roller-preparation and treatment
9	Offset printing machine – Basic configuration Handling and care, preparation for printing – fixing the plate. Lay delivery inking and dampening systems, automatic feeds, setting and adjustment, printing-line and half tone work single colour	Paper-standard size, division and sub - division, Kinds, qualities
10	Surface preparation with description (in details) processes, Eg. Albumin – Graining, counter catching, coating, exposing, developing, washing Gumming, Thin dry and fan dry	Ink-Kinds, Qualities
11	Outline of running problems due to defective plate-causes and remedies.	General care and maintenance of plate-making and litho-offset printing machinery and equipment
12	Safety- Hazards, preventive measure. Steps taken for pollution control	Safety-Hazards in plate making and machine rooms- preventive measure. Measure for pollution control
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.*

BASIC TRAINING (Block – II)

Duration: (03) Three Months

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1.	Practice the handling, care and maintenance of machines like sheet	Occupational Hazards and safety measures related to the trade. Introduction about environment and environment management system. Precautions in handling, care and maintenance of machines. working Posture, Overhauling
2.	Carry out proofing-press; fix the plate, rubber, blanket, setting the inking and dampening systems, regulation of ink and water supply. Set the operation of automatic feeder, sheet fed & web and practice set-off and anti-set-off (Spray) equipment	Proofing – press, offset printing machine set up with plate, rubber, blanket, setting the inking and dampening systems. automatic feeder, sheet fed & web , set-off and anti-set-off
3.	Set the lays, feeding, delivery adjustment, and troubleshoot the running problems and apply remedies, mixing and colour matching of inks, miscellaneous work on printing machine like bronzing varnishing, metal printing, Practice U.V. & acquits coating in ornamentation, paper graining and embossing	Wash-up rollers, hand and mechanical, multi colour work, printing of single units, multi unit machine, perfectos, sequence of printing of colour, line and half tone work, I.R. driers, chillers, Alcohol dozing
4.	Practice use of various types of sub spares, Adjust and lay the greepers like cylinder greepers, delivery greepers, and swing greepers.	Sub spares, e.g. paper, foil laminated board, foams, and P.V.C materials, plate cylinder, blanket cylinder & impression cylinder
5.	Identify the chemicals and solution used in the printing machine and practice preparation, handling care and storage, select offset blanket, Set rollers for inking and dampening and practice the washing of rollers by hand and mechanical methods.	Plates for surface and deep-etch processes. Chemicals and solution used in the printing machine, handling care and storage, offset blanket, Rollers, inking and dampening. Covering materials, washing and storage.

6.	Operate automatic feeders. Measure pH, carry out treatment and control	Automatic feeders, features setting, Imposition schemes, simple and complex schemes up to 32 pages. pH, effects of fountain solution, its treatment and control.
7.	Practice the conditional handling control of temperature and relative humidity, Practice use of various screens.	Effect of temperature and relative humidity of plates and paper, continuous tone, half tone, dot formation, its control and Size of dot and list the various screens and their use
8.	Practice the handling and storage of printed & unprinted stock.	Paper manufacture, raw materials used, classification, properties and selection of paper for printing.
9.	Practice the use of various type of sub spares like paper, foil laminated board, foams and PVC materials	Sub spares like paper, foil laminated board, foams and PVC materials
10.	practice machining colour	Ink manufacture ,raw materials used, classification, properties and selection of ink for printing
11.	Maintenance of printing machine and other equipment in a Machine room including cleaning, lubrication and overhauling. keeping of docket and output records	lubrication systems used on printing machines, transmission of power
12.	Identify and practice methods of elimination of wastages.	Modern development in offset printing Machinery, their features and other process- CTP etc
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.*

9. SYLLABUS - CORE SKILLS

9.1 WORKSHOP CALCULATION SCIENCE & ENGINEERING DRAWING

Block – I		
Sl. No.	**Workshop Calculation and Science (Duration: - 20 hrs.)**	**Engineering Drawing (Duration: - 30 hrs.)**
1	**Units & Measurements-** FPS, CGS, MKS/SI unit, unit of length, Mass and time. Fundamentals and derived units Conversion of units and applied problems.	Engineering Drawing: Introduction and its importance Different types of standards used in engineering drawing. Drawing Instruments: their uses Drawing board, T-Square, Drafter (Drafting M/c), Set Squares, Protractor, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), Pencils of different Grades, Drawing pins / Clips.
2	**Material Science**: properties -Physical & Mechanical, Types -Ferrous & Non-Ferrous, difference between Ferrous and Non-Ferrous metals.	Lines : Types and applications in Drawing as per BIS SP:46-2003 Drawing geometrical object using all types of lines. **Drawing of Geometrical Figures:** Angle, Triangle, Square, Rectangle and Circle. **Letters: -** Lettering styles, Single stroke letters and numbers as per IS standard. Lettering practice
3	**Mass .Weight and Density** : Mass, Unit of Mass, Weight, difference between mass and weight, Density, unit of density.	**Dimensioning**- Types of dimension, elements of dimensions, Methods of indicating Values, Arrangement, Alignment and indication of dimensions. **Scales**:-Types use and construction. Representative factor of scale.
4	**Speed and Velocity:** Rest and motion, speed, velocity, difference between speed and velocity, acceleration, retardation. Average Velocity, Acceleration & Retardation. Related problems. Circular Motion: Relation between circular motion and Linear motion, Centrifugal force, Centripetal force	Method of presentation of Engineering Drawing - Pictorial View - Orthogonal View - Isometric view
5	**Ratio & Proportion** : Simple calculation on related problems.	**Constructions: -** Draw proportionate free hand sketches of plane figures. Sketch horizontal, vertical and inclined line by

	Percentage: Introduction, Simple calculation.	free hand, Draw circles by free hand using square and radial line method, Draw arcs and ellipse by free hand
6	**Work, Power and Energy:** work, unit of work, power, unit of power, Horse power of engines, mechanical efficiency, energy, use of energy, potential and kinetic energy, examples of potential energy and kinetic energy. Meaning of H.P., I.H.P., B.H.P., and F.H.P. and CC and Torque.	Projections: Concept of axes plane and quadrant. Orthographic projections Method of first angle and third angle projections (definition and difference) Symbol of 1st angle and 3rd angle projection as per IS specification. Free hand Drawing of Orthographic projection from isometric/3D view of geometrical blocks

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Block – II		
Sl. No.	**Workshop Calculation and Science (Duration: - 20 hrs.)**	**Engineering Drawing (Duration: - 30 hrs.)**
1	**Algebra:** Addition, Subtraction, Multiplication, Division, Algebraic formula, Linear equations (with two variables).	**Screw :-** Its Types and Sizes, Screw thread, their standard forms as per BIS, external and internal thread.
2	**Heat & Temperature:** Heat and temperature, their units, difference between heat and temperature, boiling point, melting point, scale of temperature, relation between different scale of temperature, Thermometer, pyrometer, transmission of heat, conduction, convection, radiation.	**Rivets and Joints:-** Prepare a drawing sheet on rivets nomenclature and Joints.
3	**Mensuration:** Area and perimeter of square, rectangle, parallelogram, triangle, circle, semi circle, Volume of solids - cube, cuboid, cylinder and Sphere. Surface area of solids -cube, cuboid, cylinder and Sphere. Volume of cut-out solids: hollow cylinders, frustum of cone, block section. Volume of simple solid blocks.	Free hand Sketches for simple pipe line with general fittings.
4	**Basic Electricity:** Introduction, use of electricity, how electricity is produced, Types of current_ AC, DC, their comparison, voltage, resistance, their units. Conductor, insulator, Types of connections - series, parallel, electric power, Horse power, energy, unit of electrical energy. Concept of earthling.	Reading of drawing. Simple exercises related to missing lines, dimensions. How to make queries.
5	**Simple machines Transmission of power:** -Transmission of power by belt, pulleys & gear drive. **Heat treatment process: -** Heat treatment and advantages. Annealing, Normalizing, Hardening, Tempering.	Simple exercises related to trade related symbols. Basic electrical and electronic symbols
6	**Trigonometry:** Trigonometrical ratios, measurement of angles. Trigonometric tables. Finding the value of unknown sides and angles of a triangle by Trigonometrical method.	Free hand sketch of trade related components / parts /cutting tool indicating angles.

	Finding height and distance by trigonometry. Application of trigonometry in shop problems. (viz. taper angle calculation). Calculate the area of triangle by using trigonometry and application of Pythagoras theorem.	
7	**Concept of pressure** - **Definition**:-Force, Pressure, and their units, atmospheric pressure, gauges used for measuring pressure, problems. Introduction to pneumatics & hydraulics systems.	
8	**Simple exercises related to trade related Test Papers. Solution of NCVT test papers.**	

9.2 EMPLOYABILITY SKILLS

(DURATION: - 110 HRS.)

Block – I (Duration – 55 hrs.)	
1. English Literacy Duration: 20 Hrs.	Marks : 09
Pronunciation	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
Functional Grammar	Transformation of sentences, Voice change, Change of tense, Spellings.
Reading	Reading and understanding simple sentences about self, work and environment
Writing	Construction of simple sentences Writing simple English
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
2. I.T. Literacy Duration: 20 Hrs.	Marks : 09
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Computer Operating System	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
Word processing and Worksheet	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets.
Computer Networking and Internet	Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT - ACT, types of cyber crimes.

3. Communication Skills Duration : 15 Hrs.	Marks : 07
Introduction to Communication Skills	Communication and its importance Principles of Effective communication Types of communication - verbal, non verbal, written, email, talking on phone. Non verbal communication -characteristics, components-Para-language Body language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening. Triple- A Listening - Attitude, Attention & Adjustment. Active Listening Skills.
Motivational Training	Characteristics Essential to Achieving Success. The Power of Positive Attitude. Self awareness Importance of Commitment Ethics and Values Ways to Motivate Oneself Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview Do's & Don'ts for an interview.
Behavioral Skills	Problem Solving Confidence Building Attitude
Block – II **Duration – 55 hrs.**	
4. Entrepreneurship Skills Duration : 15 Hrs.	Marks : 06
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. Management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities. The process of setting up a business.
Project Preparation & Marketing analysis	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of PLC, Sales & distribution Management. Different Between Small Scale & Large Scale Business, Market Survey, Method of marketing, Publicity and advertisement, Marketing Mix.
Institutions Support	Preparation of Project. Role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
Investment	Project formation, Feasibility, Legal formalities i.e., Shop Act,

Procurement	Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.
5. Productivity Duration : 10 Hrs. Marks : 05	
Benefits	Personal / Workman - Incentive, Production linked Bonus, Improvement in living standard.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation - How improves or slows down.
Comparison with developed countries	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.
6. Occupational Safety, Health and Environment Education Duration : 15 Hrs. Marks : 06	
Safety & Health	Introduction to Occupational Safety and Health importance of safety and health at workplace.
Occupational Hazards	Basic Hazards, Chemical Hazards, Vibro acoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/ Disorders & its prevention.
Accident & safety	Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.
First Aid	Care of injured & Sick at the workplaces, First-Aid & Transportation of sick person.
Basic Provisions	Idea of basic provision legislation of India. Safety, health, welfare under legislative of India.
Ecosystem	Introduction to Environment. Relationship between Society and Environment, Ecosystem and Factors causing imbalance.
Pollution	Pollution and pollutants including liquid, gaseous, solid and hazardous waste.
Energy Conservation	Conservation of Energy, re-use and recycle.
Global warming	Global warming, climate change and Ozone layer depletion.
Ground Water	Hydrological cycle, ground and surface water, Conservation and Harvesting of water.
Environment	Right attitude towards environment, Maintenance of in -house environment.
7. Labour Welfare Legislation Duration: 05 Hrs. Marks : 03	
Welfare Acts	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen's compensation Act.
8. Quality Tools	

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Duration : 10 Hrs.	Marks : 05
Quality Consciousness	Meaning of quality, Quality characteristic.
Quality Circles	Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.
Quality Management System	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
House Keeping	Purpose of House-keeping, Practice of good Housekeeping.
Quality Tools	Basic quality tools with a few examples.

10. DETAILS OF COMPETENCIES (ON-JOB TRAINING)

BROAD LEARNING TO BE COVERED IN INDUSTRY FOR OFFSET MACHINE MINDER TRADE:

- Operation of offset printing press in which the impression from plate is first received on rubber blanket and then transferred to paper.
- Washes plate with chemical solutions to render non-image portions ink-repellent and to ensure clear impression.
- Practice clamping the plates firmly on cylinder, places paper roll on automatic feeding stand and fills ink in fountain in machine.
- Runs machine for printing.
- Regulates speed of machine and ensures uniformity of ink and impression.
- Cleans and oils machine.

Note: Actual training will depend on the existing facilities available in the establishments.
The **competencies/ specific outcomes** on completion of On-Job Training are detailed below: -

Block – I

1. Perform handling, care and maintenance of machines like sheet fed & web and other equipment, room materials, lubrication, Overhauling, dress and the correct working Posture.
2. Prepare machine, carry out proofing – press, offset printing machine, fix the plate, rubber, blanket, setting the inking and dampening systems, regulation of ink and water supply.
3. Set the operation of automatic feeder, sheet fed & web.
4. Identify, explain the Set-off, its causes, and their remedies and practice the use of anti-set-off (spray) equipment of various kinds.
5. Carry out machine operation, setting the lays, feeding, delivery adjustment, and troubleshoot the running problems and apply remedies.
6. Work on wash-up rollers, hand and mechanical; maintain the roller web & sheet fed.
7. Mix and colour matching of inks.
8. Carry out multi colour work, printing of single units, multi unit machine, perfectos, sequence of printing of colour, line and half tone work, set-on-wet printing and miscellaneous work on printing machine like bronzing varnishing, metal printing etc. Set U.V. & acquits coating in ornamentation, paper graining and embossing.
9. Identify and set sp.accessories – I.R. driers, chillers, Alcohol dozing used in offset printing machine.
10. Identify use of various types of sub spares, e.g. paper; foil laminated board, foams, and P.V.C materials.
11. Identify and classify cylinders like plate cylinder, blanket cylinder & impression cylinder

and adjust the parameters. Adjust and lay the greepers like cylinder greepers, delivery greepers, and swing greepers.

12. Adjust the front & side lays. Select the plate for surface and deep-etch processes, multi metal plate, anodized plates, pre-sensitised plates, their preparation, properties and use, practice handling and storage, carry out corrections, additions and deletions. Identify the chemicals and solution used in the printing machine- room, their preparation, handling care and storage, properties and use.
13. Select the offset blanket; explain their properties, care, handling and storage methods.
14. Classify and set rollers, inking and dampening kinds, identify the covering materials used for dampeners, their properties, handling, washing, care and storage.
15. Classify and set automatic feeders, explain the mechanical and operational features setting and carry out operation (Sheet fed & web)
16. Perform machine operation; identify running problems, causes and remedies. Carry out quality control and practice multi-colour printing sequence of printing of colours.

Block – II

1. Knowledge of imposition schemes, general and with relation to folding machine, simple and complex schemes up to 32 pages.
2. Define and measure pH, explain the effects of fountain solution, its treatment and control.
3. Explain the effect of temperature and relative humidity plates and paper, practice the conditional handling control and explain the advantages of air-conditioning.
4. Explain the continuous tone, half tone, dot formation, its control and Size of dot and list the various screens and their use
5. Explain the brief outline paper manufacture, raw materials used, classification, properties and selection of paper for printing. Explain the grains of paper and governing factors for selection, the machine direction and its importance, and effects and neutralization of static electricity. Practice the handling and storage of printed & unprinted stock.
6. Identify the use of various type of sub spares like paper, foil laminated board, foams and PVC materials
7. Explain the brief outline ink manufacture ,raw materials used, classification, properties and selection of ink for printing and their governing factors, Classify the driers, reducers and list their uses.
8. Explain the principles of colour additive and subtractive theories, mixing and practice machining colour
9. Classify and identify the lubricants and lubrication systems used on printing machines.
10. Explain the methods of transmission of power.
11. Carry out the preventive measure for Safety- Hazards in the trade.

12. Perform maintenance of printing machine and other equipment in a Machine room including cleaning, lubrication and overhauling.
13. Carry out keeping of docket and output records.
14. Prepare layout and plan machine room in the trade.
15. Identify and list out the modern development in offset printing Machinery, their features and other process- CTP etc
16. Identify and practice methods of elimination of wastages.

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.

ANNEXURE – I

INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE

OFFSET MACHINE MINDER			
LIST OF TOOLS AND EQUIPMENT for Basic Training (For 20 Apprentices)			
Sl. No.	**Item**	**Specifications**	**Qty.**
A : TRAINEES TOOL KIT:-			
1.	Hand transfer press – size, Demy for equivalent		1 Nos.
2.	Offset proofing press – capable of producing profs to register – size Double Demy or equivalent, with all accessories.		1 Nos.
3.	Single colour offset printing machine with automatic feeder and accessories sizes – : Double demy or equivalent		1Nos.
4.	Lining up table – size : Double demy or equivalent		1 Nos.
5.	Litho stone – size : Demy or equivalent		1 Nos.
6.	Vacuum printing down frame, with arc lamp size: Double demy or equivalent		1 Nos.
7.	Whirler machine – size :Demy or equivalent		1 Nos.
8.	Plate graining machine – size : Double Demy or equivalent		1 Nos.
9.	Glass jar / Container (For Keeping / Mixing Solution)		4 Nos.
10.	Measuring glasses – different size – graduated		6 Nos.
11.	Enamel / glass funnel		6 Nos.
12.	Hydrometer (Heavier than water)		2 Nos.
13.	Timer..		1 Nos.
14.	P.V.C sink (90cm/750cm/20cm) with stand		1 Nos.
15.	Thermometer, boume		1 Nos.
16.	Steel rule, graduated		4 Nos.
17.	Gloves		2 Pairs.
18.	Scraper steel		4 Nos.
19.	Pumice stone		1 Nos.
20.	Densitometry (Ref lection & transmission type)		1 Nos.
21.	Porcelain bowls		7 Nos.
22.	Magnifying glass (+8)		4 Nos.
23.	Cupboard steel		1 Nos.
24.	Instructor table		1 Nos.
25.	Instructor chair		1 Nos.

INFRASTRUCTURE FOR WORKSHOP CALCULATION & SCIENCE AND ENGINEERING DRAWING

TRADE: Offset Machine Minder

LIST OF TOOLS& EQUIPMENTS FOR -20APPRENTICES

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

2) Infrastructure:

A : TRAINEES TOOL KIT:-			
Sl. No.	**Name of the items**	**Specification**	**Quantity**
1.	Draughtsman drawing instrument box		20+1 set
2.	Set square celluloid 45^o (250 X 1.5 mm)		20+1 set
3.	Set square celluloid 30^o-60^o (250 X 1.5 mm)		20+1 set
4.	Mini drafter		20+1 set
5.	Drawing board (700mm x500 mm) IS: 1444		20+1 set
B : Furniture Required			
Sl. No.	**Name of the items**	**Specification**	**Quantity**
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

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

ANNEXURE-II

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	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	Total internal assessment Marks	Result (Y/N)
Maximum Marks (Total 100 Marks)			**15**	**5**	**10**	**5**	**10**	**10**	**5**	**10**	**15**	**15**		
1														
2														