

CARRICULUM

FOR THE TRADE OF

PRINTING OPERATOR

UNDER

APPRENTICESHIP

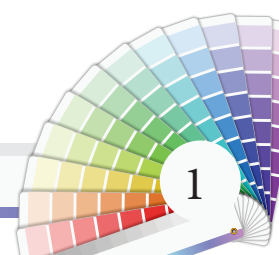
TRAINING SCHEME



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

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1 ACKNOWLEDGEMENT

The DGT sincerely express appreciation for the contribution of the Industry, State Directorate, Trade Experts and all others who contributed in revising the Printing Operator Course curriculum. Special acknowledgment to the Management and Technical Experts of M/s. Viani Printings, Kochi and its Team who have contributed valuable inputs in revising the Printing Operator Course curricula through their expert members:

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

Sl. No.	Name	Designation in VIANI PRINTINGS	Qualification	Experience
1	Fr. Varghese Manikath	Managing Director Viani Printings	BA	15 years in Various fields in the Administrative capacity
2	Fr. Bijoy Palatty	Asst. Director & Principal of ViAPT	BA & Diploma in Acoustics Eng.	3 years
3	Fr. Sen Kallungal	Managing Director Sathyadeepam	BA, MBA	3 years
4	Mr. Kurias N Chacko	Asst. General Manager - Technical & Dean of Studies of ViAPT	Electrical Eng	41 Years in Printing/ Production & Maint/ Technical & Safety
5	Sr. Monica CSN	Binding in Charge	KGTE Binding	42 years in Binding
6	Mr. KK. Suresh	Manager – Sales & Marketing		40 Years in Sales & Marketing / Costing
7	Mr. KV. Chackochan	Production Manager	Diploma in Printing Technology	28 years in Printing / Prodn
8	M/s. ATK Swara.	Production Asst	B Tech in Printing	3 years in Printing/ Prodn
9	M/s. Amritha Ayyappan	Sales Asst	Engg. Diploma in Printing Technology	2 years in Sales & Marketing
10	Mr. Joby Mathew	Graphic Designer	Diploma in Printing	7 years in Graphic Designing & CTP
11	Mr. Wilson MA	CTP Operator	Diploma in Printing	7 years in CTP Operations
12	Br. Tojo	Regent	Degree in Philosophy	1 year
13	M/s. Sani Mariya	Graphic Designer	Diploma in Printing	2 years in Graphic Designing & DTP
14	Mrs. Saiby Jiason	Office Secretary	BA	9 years as Office Secretary
15	Mr. Biju Joseph	Accounts Manager	B Com	15 years in Accounts

2 BACKGROUND

2.1 Apprenticeship Training Scheme under Apprentice Act 1961:

The Apprentices Act, 1961 was enacted with the objective of regulating the programme of training of apprentices in the industry by utilizing the facilities available therein for imparting on – the – job training (OJT). 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 (10th Standard pass – outs or so) 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 various categories of apprentices namely; **Trade apprentice, graduate, Technician, 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, and for the school leavers (10th Standard pass – outs or so) and person having National Trade Certificate (ITI pass-outs) issued by National Council for Vocational Training (NCVT) is for 3 months basic training and followed by 1 year Practical Training. The Certificates are awarded on completion of **training by the Department of Education, Ministry of Human Resource Development.**

2.2 Changes in Industrial Scenario:

Recently we have seen huge changes in the Indian industry especially in Printing field. The Indian Printing 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 work force and drive development through employment.



Various initiatives to build up an adequate infrastructure for rapid industrialization and improve the industrial scenario in India have been taken.

2.3 Reformation :

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

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

3 RATIONALE

Printing industry in India is growing; people are taking keen interest in this key industry now. There are more than 36 major printing institutes in India, some of these institutes are giving even post-graduate education. Every year more than 4000 new printing engineering graduates / technicians joins in this industry, while still much more get on the spot training in the print shops. It is said that since 1989 the growth of the Printing coupled with Packaging Printing industry is over 14%.

The growth of this sector attributes to the two main reasons, First is the spread of education- according to the 2001 census report literacy growth in India touched nearly 66 per cent. This amazing growth in literacy together with rising educational levels and rapidly progressing trade and industry in India make the current situation a happy note.

Even though the 4000 new printing engineering graduates / technicians joins in this industry every year, the Industry still faces shortage of skilled manpower, and the Printing Industry is facing struggle for the day to day operations. In view of this Printing fraternity is planning to train apprentices to be engaged at establishment level instead of trade-wise.

4 JOB PROFILE

Every printing industry need the following essential categories of staff members:

Sl No	Job Profile	Qualification & Experience	Reqd
1	Manager	Administrative level with Printing Technology / Accountancy background.	1
2	Printing Supervisors	Middle management level with Printing Technology with 7 – 10 years Experience	1 Per Shift
3	Printer	Printing Technology with 5 – 7 years Experience	1 / Shift / machine
4	Asst Printer	Printing Technology with 3 – 5 years Experience	1 / Shift / machine
5	Printing Operator	Skilled Knowledge in Printing with 1 – 2 years Experience	3 / Shift / machine
6	Asst Printing Operator	Semi Skilled Knowledge in Printing with Some Experience	3 / Shift / machine
7	Helpers	Un Skilled Labours	2 / Shift / machine

As per the above scenario, a printing industry requires a minimum of 5 Skilled / Semi Skilled persons as Machine Operator / Asst Machine Operators other than the qualified / experienced persons to ensure the desired smooth operations of the Industry.

- ❖ The Printing Operators are basically doing the work of Printing Ink loading, Dampening solution mixing, Printing plate processing, punching, bending / folding, loading in to the machine etc during the Printing operations.
- ❖ The Asst Printing Operators are also doing / helping the Printing Operators work, and are doing the Printed paper collection also from Press Conveyor while Printing
- ❖ The Asst. Printer / Printer are making the machine ready for operation, Ink and dampening level control, Side and Circumferential Register controls & Corrections etc. for the Printing work.
- ❖ The Helpers are doing the Paper make ready, Paper Loading, machine cleaning & washing operations, printed products delivery for packing, etc.
- ❖ The Printing Supervisors: In a Printing Industry, the Printing Supervisors are basically doing the work of Supervision of all the Printing activities as per the daily schedule including the Production & Maintenance of the machines. The Supervisors should be act as a link between the Management & Staff for the smooth working condition and operational activities. They should have adequate work knowledge and technical idea about the products.

5 GENERAL INFORMATION

Every printing industry need the following essential categories of staff members:

1. **Name of the Trade** : PRINTING OPERATOR
2. **N.C.O. Code No.** : New
3. **Duration of Apprenticeship Training**
(Basic Training + Practical Training) : 15 Months
 - 3.1 For Freshet's:- Duration of Basic Training : Block – I: 3 months
Total duration of Basic Training : 3 months
Duration of Practical Training
(On -job Training) : Block– I: 12 months
Total duration of Practical Training : 12 months
4. **Entry Qualification** : Passed 10th Class Examination under
10 + 2 System of Education
or its equivalent
5. **Selection of Apprentices** : The apprentices will be selected as per
Apprenticeship
Act amended time to time.
6. **Rebate for ITI passed trainees** : Nil.

Note: Industry may impart training as per above time schedule, 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 aspect is compromised and duration of industry training to be remain as 1 year.

5. 1 INFORMATION

Name Of The Committee, Drafted The Syllabus

1. Fr. VARGHESE MANIKATH

Managing Director of VIANI PRINTINGS.

2. Fr. BIJOY PALATTTY

Asst. Director of VIANI PRINTINGS & Principal of ViAPT.

3. Mr. KURIAS N. CHACKO

Asst. General Manager - Tech. of VIANI PRINTINGS &
Dean of Studies of ViAPT.

4. Sr. MONICA CSN

Binding in Charge of VIANI PRINTINGS.

5. ATK. SWARA

Production Asst of VIANI PRINTINGS

6 COURSE STRUCTURE

Training duration details: -

Time in Months	1 - 3	4-15
Basic Training	BLOCK - 1	
Practical Training : On - the - Job Training	--	BLOCK – II

Components of Training	Duration of Training in Months →														
↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Basic Training Block - I															
Practical Training Block - I															

7 SYLLABUS

7.1 BASIC TRAINING

(BLOCK – 1)

DURATION : 03 MONTHS

GENERAL INFORMATION

Name of the Trade	:	PRINTING OPERATOR
1. Hours of Instruction	:	500 Hrs.
2. Batch size	:	20
3. Power Norms	:	6 KW
4. Space Norms	:	80 Sq.m.
5. Examination	:	The internal assessment will be held on completion of the Block.

6. Instructor Qualification :

1. Degree in Printing Technology (B Tech) with 01 year Experience

OR

2. Diploma in Printing Technology with 03 years Experience

OR

3. NTC / NAC in Printing and Allied Trades with 05 years of Experience
Desirable : Craft Instructor Certificate (CIC)

7. 1 DETAIL OF SYLLABUS FOR BASIC TRAINING

7. 1 .1 DETAIL SYLLABUS OF PROFESSIONAL SKILLS & PROFESSIONAL

Block – I

BASIC TRAINING:

Week No	Professional Skills & Basic Knowledge (300 hrs)	Professional Knowledge (200 Hrs)
I Induction Training		
1	Induction Training for Practical. Plant Familiarization – By Observation	Induction Training : Induction Motivational class Video Presentation on Printing Basics information on Printing
Familiarization with tools and equipment & safety Practices:		
2	Familiarization with the general tools and equipment used in printing industry. Safety hazards, preventive measures and safety precautions for usage of various operations and chemicals, pollution control etc. Handling and care of raw materials; upkeep of various types of plate surface, deep etch, pre-sensitized and wipe on plates	History of printing, comparative analysis of different printing processes Lithographic plates, its various types, handling and care. Use of various types of measuring equipment, gauges etc., their use and relevance to Off-set printing Safety Awareness Class: Safety Precautions to be taken in Various Sections.
3	Handling and operating the Computer, using desk-top bars, start button, menus and help menus. Principle of graphic design and its simple applications. like litho - stone plates made of zinc, copper, Aluminum and per-sensitized plates, their care and handling procedure.	Standard Paper sizes, Indian and British. Divisions, sub- divisions, kinds, qualities and its suitability to different printing jobs. Handling and care of printed and un-printed paper Printing : History of Printing Classification on Printing Various types of Printing

Safety practices: Preventive measures.		
4	<p>Handling and care of Off-set Printing Machine, preparing the machine for printing by fixing the plate, set right the inking and dampening system, setting of manual/ automatic feeder.</p>	<p>Types of offset printing Dry & Wet, Equipment and materials used in re-touching work, retouching desk, illuminating lighting and viewing, factors affecting colour judgment</p>
5	<p>Safety hazards, preventive measures and safety precautions for usage of various chemicals used in screen printing.</p> <p>Preparation of raw material, like various printing inks, screen and other miscellaneous makes, preparation of various printing surfaces</p> <p>Preparation of screen by direct process using direct coating material and indirect process (transfer process)- pigment paper, screen cloth.</p> <p>Storage of screens - precautions for cleaning & storing the screen, line screen, screen angle, screen distance, dot formation, contact screens.</p> <p>Arrangement for colour separation using scanner. .</p>	<p>Printing surfaces- outline screen printing processes, composing (DTP), stencils and designs.</p> <p>Safety hazards, preventive measures and safety precautions for usage of various chemicals used.</p> <p>Photographic materials, plates and films, emulsions, preparation, handling and care.</p> <p>Use of screen sheets, tint laying and their maintenance.</p> <p>Equipment and materials used in preparation of jigs and frames, bolting cloth, printing table, different adhesives used, handling and care.</p> <p>Effect of humidity on the film coating, hardening of the film, developing of the exposed film, transferring the stencil selection of mesh for bolting cloth to be printed on different material.</p>
II Pre-Press Practice for operating the Computer		
6	<p>Practice for operating the Computer, Installing Windows, using desk-top bars, start button, menus and help menus.</p> <p>Creating, deleting and renaming folders, short cuts, starting an application, shutdown and restart, work with zip-files, search file, rename file, viewing disk space .</p> <p>Using Note Pad, MS Word, inserting picture, working with image, paint brush, character map, symbol tools.</p>	<p>Introduction to Desktop Publishing, its origin</p> <p>Components of Desktop Publishing, System, the traditional Publishing , and Publishing under PC environment.</p> <p>Concept of publishing, creating publishing page. System of page folding with different options (single fold, double fold, reverse side fold), scanning photos & images</p> <p>Computer application in pre - press work. Composing, scanning, colour mixing, image processing etc.</p>

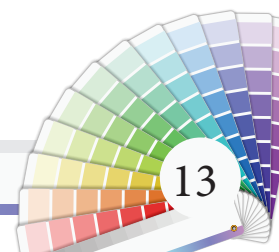
7	<p>Practice on computer, page composition, scanning text and picture using scanner, preparation of films on image setter,</p> <p>Making tables, editing data in table .Use of Ruler Guide, column guide and library, Importing / Exporting filing, stroking frames, arranging, text wrapping.</p> <p>Use Page Maker software for designing cover page of Books, creating book with publishing software , Charts, Linking large graphics, make positive films for screen-printing.</p> <p>Practice on Adobe Illustrator,</p>	<p>Use of Page Maker Software. Application of Page Making, use of DTP features, introduction & application of Adobe in designing.</p> <p>Concept of bitmaps, vector graphics, use of plotter and its application</p> <p>Concepts of Photo shop and its application.</p> <p>Introduction to digital photographic technology, use of web camera and digital camera. Theory of Dot formation.</p>
Imposing System:		
8	<p>Rules of imposition, Simple imposing scheme and its relation to the type of folding methods applicable, Lining up, table Lay out sheet preparation</p> <p>Layout sheets preparation</p> <p>Arrangement for colour separations using scanner</p> <p>Familiarization with various printing surfaces like litho-stone plates made of zinc, copper Aluminium and pre sensitized plates their care and handling procedure.</p> <p>Handling and care of raw materials; upkeep of various types of plate surface, deep etch, pre-sensitized and wipe on plates.</p> <p>Handling, care and maintenance of machines, equipment and other materials used for plate making, lubrication, overhauling</p> <p>Grinding of metal plates equipment and materials their use plate graining machine handling and care</p>	<p>Equipment and materials used in retouching work, retouching desk, illuminating lighting and viewing, factors affecting colour judgment.</p> <p>Use of screen sheets, tint laying and their maintenance.</p> <p>Simple imposing (work & turn and work & tumble) scheme and its relation to the type of folding methods applicable up to 16 pages, and 32 pages.</p> <p>Concept of publishing, creating publishing page. System of page folding with different options (single fold, double fold, reverse side fold), scanning photos & images.</p> <p>Color: Color theory & its Principles, theory of color separation, filter, sequence of color printing, Black printer of reducer and drier</p> <p>General care and maintenance of plate making equipment. Temperature and humidity controls, Effects on plates.</p> <p>Light sources - kinds, exposure - printing - down frame use.</p> <p>Measuring gauges, Hydrometer, densitometer etc., their handling, care and use.</p>

Plate Making & Process		
9	Solutions for plate making - surface and deep-etch plates - materials used, prepare on and handling, Measuring meters.	Plate making - surface and deep-etch plates, Nyloprint and dry offset plates, outline of chemicals and solutions used for plate making, use of Whirler
10	<p>Plate making - surface and deep-etch plates, Nyloprint and dry offset plates, outline of chemicals and solutions used for plate making, use of Whirler</p> <p>Plate making - Equipment and materials, whirler, printing - down frame etc. their use.</p> <p>Plates for surface and deep-etch processes, kinds of processed plates, their care, handling and use, Bi & Tri metal plates, Nyloprint Plates, Micro plates for dry offset per-sensitized plates.</p> <p>Exposure: Factor governing exposure time, image formation - treatment and control</p>	<p>Use of Tech Nova sheets.</p> <p>Photographic materials, plates and film, emulsions, preparation, handling and care.</p> <p>Equipment and material used for making various Off-set plates, photo-chemical process for plate making for use in Off-set Machines.</p> <p>Plates-metals used - aluminum, zinc, and copper, properties, their handling, care and use, per-sensitized plates.</p> <p>General care and maintenance of plate making equipment,</p> <p>Temperature and humidity controls, Effects on plates.</p> <p>Use of technova (Astrillan) sheets</p>
III Press Printing Surfaces, Ink & Measuring Tools:		
11	<p>Handling, care and use of various types of measuring gauges like Hygrometer, Brume thermometer, Densitometer etc.</p> <p>Preparing tint, shades, matching and mixing of ink; Tack, length, flow and use of reducer and drier</p> <p>Familiarization of Printing surface - Grinding of metal plates -</p>	<p>Printing Ink, Component of different types of inks, tints, shades, matching and mixing of ink;</p> <p>Tack, length, flow and use</p> <p>Colour: Colour theory & its Principles, theory of colour separation, filter, sequence of colour printing, Black printer of reducer and drier.</p> <p>Theory of dot formation: High-light and Shadow</p>
Cleaning, lubrication & general maintenance of machinery & Equipment.		
	Classification of various components of the Offset Machines	Lithographic plates, its various types, handling and care

12	<p>Sheet fed Offset printing machines - single and multi color - basic configuration, handling and care, preparation for printing, fixing the plate, lays setting, setting of inking and dampening system, - initial and actual setting, setting of feeders. Handling, care and fixing of blanket.</p> <p>Rollers - kinds, setting, cleaning, preparation, treatment, handling and storage.</p>	<p>Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage</p> <p>Various types of Off-set Printing Machines- both single and multi colour.</p> <p>General care and maintenance of plate making and litho offset printing machine and equipment</p> <p>Dry (Lexicography printing on various kinds of material)</p>
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Printing Material Science

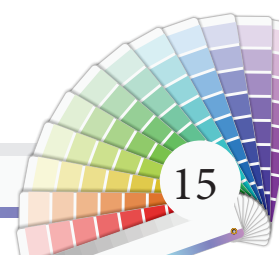
13	<p>Understanding of Standard Paper sizes, Indian and British Divisions, sub-divisions, kinds, qualities and its suitability to different printing jobs.</p> <p>Plate making equipment and materials Whirler, printing down frame etc. their use</p> <p>Preparation of raw material like various printing inks screen and other miscellaneous make preparation of various printing surfaces.</p> <p>Understanding of Printing Ink, Component of different types of inks, tints, shades, matching and mixing of ink; Tack, length, flow and use</p>	<p>Plate graining - equipment and materials used - quality of the grain.</p> <p>Plates-metals used - aluminum, zinc and copper, properties, their handling, care and use, pre - sensitized plates.</p> <p>Lithographic plates, its various types of handling and care.</p> <p>Equipment and material used for making various Off-set plates photo chemical process</p> <p>Lithographic plates, its various types, handling and care</p> <p>Use of various types of measuring equipment gauges etc. their use and relevance to Off-set printing.</p> <p>Standard Paper sizes, Indian and British Divisions, sub-divisions, kinds, qualities and its suitability to different printing jobs.</p> <p>Handling and care of printed and unprinted paper.</p> <p>Printing Ink, Component of different types of inks, tints, shades, matching and mixing of ink; Tack, length, flow and use</p> <p>Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage.</p>
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Registration device.		
14	<p>Handling and care of Off-set Printing Machine, preparing the machine for printing by fixing the plate, set right the inking and dampening system, setting of manual/ automatic feeder.</p> <p>Running defects</p> <p>Familiarization with the tools and equipment and machinery used in Offset Web perfecter multi colour Machine printing process.</p> <p>Cleaning, lubrication & general maintenance of Off-set Web perfecter multi colour Machine machinery and equipment</p>	<p>Types of offset printing Dry & Wet,</p> <p>Running defects: causes and remedies.</p> <p>Defective plates- causes and remedies, running problems</p> <p>Equipment and material used for making various Off- set plates, photo chemical process for plate making for use in Off-set Machines.</p> <p>Lithographic plates, its various types, handling and care.</p> <p>Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage</p>
Off-set Sheet perfecter multi colour Machine		
15	<p>Basic configuration, handling and care, preparation for printing, fixing the plate, lays setting, setting of inking and dampening system, - initial and actual setting, setting of feeders. Handling, care and fixing of blanket.</p> <p>Rollers-kinds, setting, cleaning, preparation, treatment, handling and storage. Alignment of cylinders.</p>	<p>Various types of Off-set</p> <p>Web perfecter multi colour machine</p> <p>Setting of electronic, computerized machine controls : Electronic eye, for colour registration, Web detector, numbering, folding, trimming etc</p> <p>General care and maintenance of plate making and Off-set</p> <p>Web perfecter multi colour Machine and equipment.</p>
IV Post Press History of Book Binding		
16	<p>Standard folding / standard folding schemes of 16 pages.</p> <p>Gathering and collating, signatures, their use for making up a book.</p> <p>Stitching - hand and wire stitching, Side and centre stitch Spiral binding of different types.</p> <p>Sewing, Tape, cord, swan - in swing, over casting.</p>	<p>History of printing, comparative analysis of different printing processes.</p> <p>Structure of Book and various book binding methods. Styles of binding.</p> <p>Material used in Binding paper, board, book cloth leather, handling, care, sizing etc.</p>

17	<p>Practice on Various book binding techniques / Stitching machines etc.</p> <p>Forwarding operations, Case making and finishing Operation:</p> <p>Rounding and backing, tipping knocking and counting.</p> <p>All kinds of of End papers pasting, adhesives its preparation and use.</p> <p>Use of Guillotine machine (3 side trimmer) and safety precautions.</p> <p>Adhesives its preparation and use</p> <p>perforating, numbering, eyeleting, equipment used and handling and precautions.</p> <p>Flush binding, Case binding</p> <p>Edge decoration - Guiding, Marbling, Colouring, Tinting, indexing, tabbing, gold tooling, Blind tooling.</p>	<p>Simple imposing scheme and its relation to the type of folding methods applicable up to 16 pages.</p> <p>Folding - standard folding schemes up to 16 pages.</p> <p>Gathering and collating, signature and their use.</p> <p>Classification of various book binding methods Hand sewn, Machinery sewn, section sewn. Direct perfect binding, with or without side glue etc.</p> <p>Stitching & sewing, hand and machine methods.</p> <p>End paper, kinds and purpose.</p> <p>Forwarding operations, Case making and finishing Operation.</p> <p>Rounding and backing, tipping knocking and counting backing, case making by hand, tools required.</p> <p>Tipping and pasting of plates, maps etc.</p> <p>Storage of various materials use in bindery shop.</p>
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Revision & Internal Assessment



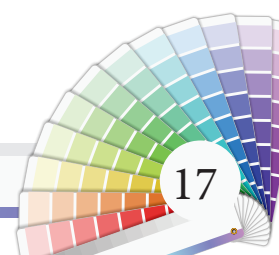
7. 1. 2 TOOLS, EQUIPMENTS & MACHINERY REQUIRED:

TOOLS & EQUIPMENT FOR BASIC TRAINING :

PRINTING OPERATOR

Sl. No	Description of items	Quantity
SOFTWARE		
1	MS Office latest version	As Required
2	Adobe Page Maker latest version, Coral Draw, Photo shop Macro media Products, Ripping Software	As Required
3	Anti Virus Latest version	As Required
4	Algol / Chalontika / 1-Leap / Leap Office (An one of these or any other multi lingual software latest version)	As Required
5	Fact / Talley / ACE, Ex-Engine (any one of these or any other financial Accounting software latest version)	AS Required
HARD DRIVE		
6	Desktop computer with minimum configuration Pentium IV 10 19 Processor 2.66 GHz 512 MB DDR RAM, 80 GB HDD 3.5" FDD 52 X CD Drive (Combo R/RW), 15" SVGA color Monitor with 32 MB Graphic Adopter, 3 button Mouse, 105 keys key board	AS Required
7	Laser Printer Colour	1 No
8	Scanner Digital	1 No
9	10 Port Hub	As Required
10	Ethernet cords 10X 100 mpbh	As Required
11	UPS 05 KVA	1 No
12	Air Conditioner 1.5 ton	3 Nos
13	Telephone Line (for internet)	As Required
14	Room temperature thermometer	1 No
15	Fire extinguisher	12 Nos

16	Digital Camera (4.2, 5.1, M Pixel)	1 No
17	Web Camera 1	As Required
18	Magnifying glass (+8)	5
19	Cupboard steel	As Required
20	Ems scale	2
21	Set squares (18 inch Size)	5
22	Tool Kits of standards make	5
23	Plate Storing Rack for Violet & Thermal Plates	3 each
24	CTP Exposing Machine For Violet Plates	1
25	CtP Plate Processor for Violet Plates	1
26	CtP Exposing Machine For Thermal Plates	1
27	CtP Plate Processor for Thermal Plates	1
28	UPS for Ctp & Plate Processor with Capacity 15 KVA	1 each
29	Compressor For Air Supply 10 PSA	1 each
30	Plate Punching Device for all machines	1 each
31	Pre sensitized (PS) plates for Violet type (Negative) of different sizes,	As Required
32	Plate developer for Violet (Negative Plates)	As Required
33	Image remover for Negative (Violet) Plates	As Required
34	Finisher,	As Required
35	Uni gum	As Required
36	Sponge	As Required
37	Brush	As Required
38	Pre sensitized (PS) plates for Thermal Type (Positive) of different sizes,	As Required
39	PS developer (Thermal (Positive Plates)	As Required
40	Image remover for Positive (Thermal) Plates	As Required
41	Glass Jar / Container (For keeping / mixing solution)	2
42	Sink (180 cm X 750 cm X 20 cm.)	2
43	Room Thermometer	1
44	Micrometer (0-25 mm), (25-50 mm)	1
45	Vernier Caliper	1



WEB OFFSET PRINTING MACHINE		
46	Multi colour offset printing machine with Reel feeder, Folder and accessories	1
47	Machines Tools. (Standard set).	As Required
48	Plate bending Device	1 each
49	Reel trolley for loading the reels in to the Press units	1each
50	Roller racks	As Required
51	Primary inks, cyan, magenta, yellow, black	As Required
52	Ink Reducer, drier, extender	1 each
53	Lubricating oils. Oil can.	As Required
54	Fountain solution,	As Required
55	Sponges,	As Required
56	Fountain Solution Mixing & Chiller tank	1 each
57	Cleaning liquids.	As Required
58	Finisher & Washing Chemicals	As Required
59	Substrate : Paper reels with required Size & Gramage	As Required
60	ph tester Electronics	1
61	Conductivity tester meter	1
62	Work bench and table standard size.	2
63	Cotton Waste for cleaning	As Required
64	Gloves	As Required
65	Compressor For Air Supply 10 PSA	1 each
SHEET FED OFFSET PRINTING MACHINE		
66	Single colour offset printing machine with automatic feeder and accessories.	1
67	Multi colour offset printing machine with automatic feeder and accessories.	1
68	Linen cloth	As Required
69	Various types of Papers, cards	As Required
70	Other printing material	As Required
71	Chemicals used on machines and rollers	As Required
72	ph Strips.	As Required
73	Plate bending Device	1 each
74	Primary inks, cyan, magenta, yellow, black	As Required

75	Finisher & Washing Chemicals	As Required
76	Substrate : Paper & Boards with required Size, Variety & Gramage	As Required
77	Fountain solution,	As Required
78	Sponges,	As Required
79	Fountain Solution Mixing & Chiller tank	1 each
80	Cleaning liquids.	As Required
81	Machines Tools. (Standard set).	1
82	Pallets for Loading the Paper in sheet form	As Required
83	Pallets Trolley for Loading the Paper in feeder	As Required
84	Compressor For Air Supply 10 PSA	1 each
GENERAL MACHINES & TOOLS		
85	Folding Machine	2
86	Gathering Machine	1
87	Saddle Switcher	1
88	Perfect Binding Machine	2
89	Strapping Machine	1
90	3 Knife Cutting Machine	1
91	Programmable Cutting Machine	1
92	Lamination Machine	1
93	Shrink Wrapping Machine	1
94	Sewing Machine	1
95	Power Generator for Power supply backup	1
96	Wire stitching machine 1" (2.5 cm)	2
97	Screw press (2 different sizes)	1 Each
98	Paper cutting machine, size (90 cm.) or three knife trimmer	1
99	Wooden planks (size 2'1') (60 x 30 x 2.5 cm)	As Required
100	Needle for sewing	As Required

101	Spiral binding machines	2
102	Nipping Press	1
103	Hand numbering machine	1
104	Perforating machine (60 cm), (treadle type)	1
105	Punching machine (with a set of punches)	2
106	Eyeleting and punching machine	1
107	Corner cutting machine (treadle type)	1
108	Creasing machine	1
109	Board cutter	1
110	Paper cutting knives	5
111	Scissors	10
112	Hammer	4
113	Bodkins	5
114	Brushes 25 mm., 50 mm., 100 mm. (In equivalent metric sizes) available	5 Each
115	Steel rule (60 cm)	10
116	Racks for paper	2
117	Work table (240 x 120 x 75 cm)	4
118	GSM Tester	2
FURNITURE		
119	Straight back revolving & adjustable chairs (computer Chairs)	20 Nos
120	Computer Tables	10 Nos
121	Printer Tables	1 No

Note : In case of Basic training setup by the Industry, the tools Equipment and Machinery available in the Industry may also be used for imparting basic training.

7. 1. 3 EMPLOYABILITY SKILLS

GENERAL INFORMATION

- 1. Name of the subject** : **EMPLOYABILITY SKILLS**
- 2. Applicability** : **ATS- Mandatory for fresher only**
- 3. Hours of Instruction** : **100 Hrs.**
- 4. Examination** : **The examination will be held at the end of two years Training by NCVT.**
- 5. Instructor Qualification :**

MBA / BBA with two years' experience or graduate in sociology / social welfare / Economics with two years' experience and trained in Employ ability skill from DGET Institute.

And

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

OR

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

7. 1. 3. 1 SYLLABUS OF EMPLOYABILITY SKILLS

A. BLOCK – 1 BASIC TRAINING

Topic No.	Topic	Duration (in Hours)
English Literacy		
1	Pronunciation: Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)	15
2	Functional Grammar: Transformation of sentences, Voice change, Change of tense, Spellings.	
3	Reading: Reading and understanding simple sentences about self, work and environment	
4	Writing: Construction of simple sentences Writing simple English	
5	Speaking / Spoken English: Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita es- sential parts, letters of application reference to previous communication	
I.T. Literacy		
1	Basics of Computer: Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.	15
2	Computer Operating System : Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications	

3	Word processing and Worksheet: Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets	15
4	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's in Information Security, Awareness of IT - ACT, types of cyber crimes	
Communication Skill		
1	Introduction to Communication Skills: Communication and its importance Principles of Effective communication Types of communication - verbal, nonverbal, written, email, talking on phone. Nonverbal communication -characteristics, components-Para-language Body - language Barriers to communication and dealing with barriers. Handling nervousness/ discomfort. Case study/Exercise	25
2	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.	

3	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 Employ ability Planning. Case study/Exercise	15
4	Facing Interviews Manners, Etiquettes, Dress code for an interview Do's & Don't s for an interview	
Entrepreneurship skill		
1	Concept of Entrepreneurship Entrepreneurship- Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. Management, Entrepreneurial motivation. Performance & Record, Role & Function of entrepreneurs in relation to the enterprise & relation to the economy, Source of business ideas, Entrepreneurial opportunities, and The process of setting up a business.	15
2	Project Preparation & Marketing analysis Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & application of Product Life Cycle (PLC), Sales & distribution Management.	
3	Institutions Support Preparation of Project. Role of Various Schemes and Institutes for self employment i.e. DIC, SIDA, SISI, NSIC, SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies / Programmers & procedure & the available scheme.	
4	Investment Procurement Project formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment procedure - Loan procurement - Banking Processes.	

Occupational Safety, Health & Environment Education:		
1	Safety & Health: Introduction to Occupational Safety and Health importance of safety and health at workplace. Safety practices: Health Hazards Safety Practices : Pre Sensitive Measures. Safety hazards, preventive measures and safety precautions for usage of various chemicals used. Fire and Safety.	25
2	Occupational Hazards Basic Hazards, Chemical Hazards, Vi bro - acoustic Haz- ards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupation- al Diseases/ Disorders & its prevention.	
3	Accident & safety: Basic principles for protective equipment. Accident Prevention techniques - control of accidents and safety measures.	
4	First Aid: Care of injured & Sick at the workplaces, First-Aid & Trans- portation of sick person	
5	Basic Provisions: Idea of basic provision of safety, health, welfare under legislation of India.	
6	Ecosystem: Introduction to Environment. Relationship between Society and Environment Ecosystem and Factors causing imbalance.	
7	Pollution: Pollution and pollutants including liquid, gaseous, solid and hazardous waste.	
8	Energy Conservation: Conservation of Energy, re-use and recycle.	

9	Global warming: Global warming, climate change and Ozone layer depletion.	25
10	Ground Water: Hydro logical cycle, ground and surface water, Conservation and Harvesting of water	
11	Environment: Right attitude towards environment, Maintenance of in-house environment	
Labor Welfare Legislation		
1	Welfare Acts: Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workman’s compensation Act.	5
Quality Tools		
1	Quality Consciousness : Meaning of quality, Quality Characteristic	10
2	Quality Circles : Definition, Advantage of small group activity, objectives of quality Circle, Roles and function of Quality Circles in Organization, Operation of Quality circle. Approaches to starting Quality Circles, Steps for continuation Quality Circles.	
3	Quality Management System : Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.	
4	House Keeping : Purpose of Housekeeping, Practice of good Housekeeping.	

7. 1. 3. 2 PRACTICAL TRAINING (ON JOB TRAINING)

(BLOCK – 1)

DURATION : 12 MONTHS

GENERAL INFORMATION

- 1. Name of the Trade : PRINTING OPERATOR**
- 2. Batch Size : a). Apprentice Selection as per Apprenticeship Guidelines.**
: b). Maximum 20 candidates in a group.
- 3. Examination : i). Terminal Assessment will be held on completion of the block.**
: ii). NCVT Examination will be conducted at the end of Apprenticeship Training
- 4. Instructor Qualification :**

Degree in Printing Technology with one year Experience
OR

Diploma in Printing Technology with three years Experience
OR

NTC / NAC in Printing and Allied Trades with five years of Experience
Desirable : Craft Instructor Certificate (CIC)

7. 1. 3. 3 INFRASTRUCTURE FOR ON - JOB TRAINING

TRADE: PRINTING OPERATOR

Actual training will depend on the existing facilities available in the establishments. However, the industry should ensure that the broad skills defined against On-Job Training part (i.e. 12 months) are imparted. In case of any short fall the concern industry may impart the training in cluster mode/ any other industry/ at ITI.

7. 1. 3. 4 BROAD SKILL COMPONENT TO BE COVERED DURING ON JOB TRAINING

BLOCK – I

1. Safety and best practices (5S, KAIZEN etc.)

2. Record keeping and documentation.

DURATION: 12 MONTHS (52WEEKS)	
WEEK NO	LIST OF PRACTICAL SKILLS TO BE COVERED DURING ON JOB TRAINING
FAMILIARIZATION	
1	Familiarization of System and Practices followed in the Industry
2	Familiarization of Machines by observations
DTP / DESIGNING / PAGE MAKING & PLATE MAKING PROCESS DTP / DESIGNING	
3	Gathering work knowledge in the DTP system
4	Practicing with DTP for Composing and document entry
5	Gathering work knowledge in the Scanning system
6	Practicing with Scanners for Digitizing Images and document Preparation
7	Gathering work knowledge in the Design & Pagination system
8	Practicing work in the Design & Pagination system
9	Gathering work knowledge of Outputting after the Design & Pagination work
10	Practicing work of Outputting after the Design & Pagination work
CTP SYSTEM FOR PLATE MAKING	
11	Gathering work knowledge of retrieval of pages from clients & Ripping of pages for CtP system

12	Practicing work of Outputting after Ripping of pages to CtP system
13	Acquiring knowledge of Retrieval of Ripped pages for Plate outputting through CtP system
14	Practicing of Outputting of Retrieved the Ripped pages for Plate outputting to CtP system
15	Loading of the Plates in the Ctp system for outputting the pages
16	Transfer of Exposed Plates to Plate Processor for De sensitizing, Washing & Gumming
17	Transfer of Processed plates to punching machine for fixing on the slot on the Press.
<p style="text-align: center;">PAPER SELECTION / PAPER READY, PRINTING & DELIVERY – WEB OFFSET MACHINE PAPER READY FOR WEB FED OFFSET MACHINE</p>	
18	Selection of Paper in reel form for the printing work depends on the Make / size / GSM.
19	Paper make ready: <ul style="list-style-type: none"> • Side Wrapper removal before Shifting of Paper to Press room • Fixing of the Reel shaft inside the reel core. • Shifting of the Reels to Reel Stand. • Removal of the main wrapper (full) of the reel. • Removal of the Cut waste if any on the peripheral of the reel • Threading of the paper to the Printing Unit.
20	Press make ready : <ul style="list-style-type: none"> • Cleaning of the Impression Cylinder Blankets. • Cleaning of the Plate Cylinder. • Cleaning of the Ink Rollers. • Cleaning of the Dampening Rollers. • Cleaning of the Guide Rollers. • Cleaning of the Nipping Rollers <p>& adjusting the pressure depends on the page no.</p> <ul style="list-style-type: none"> • Cleaning of the former and adjusting the Pressure depends on the page no. • Filling of Process Ink on respective ink ducts (depends on the color sequence) • Adjusting of the Ink buttons position to the minimum, initially. • Filling and regulating the Dampening solution flow to the water trays. • Adjusting the paper path compensators to middle position. • Checking and Adjusting of the plate cylinder for centering. • Checking & and adjusting for the availability of required Compressor air pressure.
	Dampening Solution (Fountain Solution) make ready: <ul style="list-style-type: none"> • Cleaning of Chiller unit Tank for removal of Ink /paper / chemical sediments & debris. • Refilling of Fresh water with required pH value (raw water with 7 pH) • Mixing of Fountain Solution with required ratio (1.5% - 2%) of the water. • Checking of pH value of the Dampening solution (pH should be between 4.5 to 5.5) • Checking of Conductivity of Dampening solution (it should be between 900 to 1800)

	<ul style="list-style-type: none"> • Checking and adjusting of Chiller cooling temperature to be below 20 degree Celc. • Checking and ensure the return flow of Dampening solution from press to Chiller unit.
22	<p>Printing make ready:</p> <ul style="list-style-type: none"> • Loading of the Paper to reel stand • Threading of the Paper to Folder via Printing unit • Bending of the Processed Plates after punching. • Loading of the Bended Plates to respective Plate Cylinder (in CMYK sequence) • Adjusting the Ink keys with reference to the image density on the plates. • Adjust the speed of Dampener Motor for regulating the Dampening solution supply. • Initial Speeding of the machine after plate loading is over for plate washing and printing trial. • Fine turning & adjusting the break tension of the webs for smooth riding. • Adjustment of Lateral & Circumferential registration correction of the color pages for matching the image. • Final adjustment of Ink density through Ink duct keys. • Checking of the Auto switching of Dampening / Ink / Impression systems for printing. • Speeding the machine with Impression to safe speed, which the crew is confident.
23	<p>Collection of Printed Copies & Delivery:</p> <ul style="list-style-type: none"> • Collect and stalk the Printed and folded & counted • copies from the Folder conveyor. • Transfer of Printed copies / forums for further processing – Packing for • Dispatch / forums to Post Press for book / magazine making.
PAPER SELECTION / PAPER READY, PRINTING & DELIVERY – SHEET FED OFFSET MACHINE	
PAPER READY FOR SHEET FED OFFSET MACHINE	
24	Selection of Paper in sheet form for the printing work depends on the Make / size / GSM.
25	<p>Paper make ready:</p> <ul style="list-style-type: none"> • Removing of Wrapper before Shifting of Trimming to required size. • Trimming of Paper for all sides for side damages while packing & transporting. • Shifting of the Paper to In feed pallet device.
26	<p>Press make ready :</p> <ul style="list-style-type: none"> • Cleaning of the Impression & Blanket Cylinder Blankets. • Cleaning of the Plate Cylinder. • Cleaning of the Ink Rollers. • Cleaning of the Dampening Rollers. • Cleaning of the moving paper Grippers • Filling of Process Ink on respective ink ducts (depends on the color sequence) • Adjusting of the Ink buttons position to the minimum, initially. • Filling and regulating the Dampening solution flow to the water trays. • Checking and Adjusting of the plate cylinder for centering

27	Dampening Solution (Fountain Solution) make ready: <ul style="list-style-type: none"> • Cleaning of Chiller unit Tank for removal of Ink /paper /chemical sediments & debris. • Refilling of Fresh water with required pH value (raw water with 7 pH) • Mixing of Fountain Solution with required ratio (1.5% - 2%) of water. • Mixing of IPA (Iso Pro pale Alcohol) with required ratio (.5% - 1%) of water. • Checking of pH value of the Dampening solution (pH should be between 4.5 to 5.5) • Checking of Conductivity of Dampening solution (it should be between 900 to 1800) • Checking and adjusting of Chiller cooling temperature to be below 20 degree Celc. • Checking and ensure the return flow of Dampening solution from press to Chiller unit.
28	Printing make ready: <ul style="list-style-type: none"> • Loading of the Paper to In feed pallet. • Bending of the Processed Plates. • Loading of the Bended Plates to respective Plate Cylinder (in CMYK sequence) • Adjusting the Ink keys with reference to the image density on the plates. • Adjust the speed of Dampener Motor for regulating the Dampening solution supply. • Initial Speeding of the machine after plate loading is over for plate washing and printing trial. • Adjustment of Lateral & Circumferential registration correction of the color pages for matching the image. • Final adjustment of Ink density through Ink duct keys. • Checking of the Auto switching of Dampening / Ink / Impression systems for printing. • Speeding the machine with Impression to safe speed, which the crew is confident. • Re load the first side printed sheets for back side printing (if necessary) • Same process repeat for back side printing also.
29	Collection of Printed Copies & Delivery: <ul style="list-style-type: none"> • Shift the stalked, Printed copies from the machine delivery pallet. • Transfer of Printed copies / forums for further processing – for sizing for Dispatch / forums to Post Press for book / magazine making.
PRINTED FORUMS FOR POST PRESS ACIVITIES FROM WEB FED OFFSET	
30	Book / Magazine making: Manual system. <ul style="list-style-type: none"> • Shifting of Half folded forums from Web offset press to manual Quarter Folding . • Collation of manual folded forums & Cover for manual pinning. • After manual pinning, the magazine is stalked for manual Trimming.

31	Book / Magazine making: Motorized system. <ul style="list-style-type: none"> Shifting of Half folded forums from Web offset press to Manual Quarter Folding. Shifting of Quarter folded forums from Web offset press to manual Collation & Pinning Shifting of Quarter folded forums from Web offset press to Saddle Stitcher for automatic Collation, Pinning & trimming. Packing & dispatching of Finished books / magazines from Saddle stitching machine for dispatching.
32	Perfect Binding: <ul style="list-style-type: none"> Shifting of Quarter folded forums from Web offset press / manual quarter folded forums to Gathering Machine for automatic Gathering for perfect Binding. Feeding to Perfect binding Machine for machine pasting and adding cover to book.
PRINTED FORUMS FOR POST PRESS ACIVITIES FROM SHEET FED OFFSET	
33	Book / Magazine making: Manual system. <ul style="list-style-type: none"> Shifting of printed forums from sheet offset to manual Folding (smaller work). Collation of manual folded forums & Cover for manual pinning. After manual pinning, the magazine is stalked for manual Trimming.
34	Book / Magazine making: Motorized system. <ul style="list-style-type: none"> Shifting of Printed forums from Sheet fed offset press to Folding machine for folding to required size. Shifting of folded forums from Folding machine to manual Collation & Pinning Shifting of folded forums from Folding machine to Saddle Stitcher for automatic Collation, Pinning & trimming. Shifting the finished books to Wrapping & Strapping machine for packing & labeling of Finished books / magazines from Manual Pinning / Saddle stitching machine for dispatching. Dispatching to clients.
35	Perfect Binding: <ul style="list-style-type: none"> Shifting of folded forums from Folding machine / manual folded forums to Gathering Machine for automatic Gathering for perfect Binding. Feeding to Perfect binding Machine for machine pasting and adding cover to book.
36	Trimming / Packing / Dispatching of Books: <ul style="list-style-type: none"> The manual Pinned and Perfect binded books are shifting to 3 knife Trimmer machine for trimming. Shifting the trimmed books to Wrapping & Strapping machine for packing & labeling Dispatching to clients.

8 ASSESSMENT STANDARD

8.1 ASSESSMENT GUIDELINE:

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking assessment. Due consideration to be given while assessing for team work, avoidance / reduction of scrap / wastage and disposal of scrap / wastage as per procedure, behavioral attitude and regularity in training.

The following marking pattern to be adopted while assessing:

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

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

In this work there is evidence of:

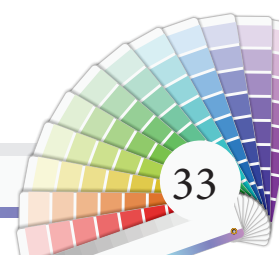
- ◆ Good skill levels in the use of hand tools, machine tools and workshop equipment
- ◆ Many tolerances while undertaking different work are in line with those demanded by the component/job.
- ◆ A fairly good level of neatness and consistency in the finish
Occasional support in completing the project/job.

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

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

In this work there is evidence of:

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



- χ). **Weight age in the range of above 90% to be allotted during assessment under following performance level:**

For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.

In this work there is evidence of:

- ◆ High skill levels in the use of hand tools, machine tools and workshop equipment.
- ◆ Tolerances while undertaking different work being substantially in line with those demanded by the component/job.
- ◆ A high level of neatness and consistency in the finish.
Minimal or no support in completing the project.

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

SUBJECTS	Marks	Sessional Marks	Full Marks	Pass Marks	Duration of Exam
Practical	300	100	400	240	08 Hrs
Trade Theory	100	20	120	48	03 Hrs
Employ ability Skill	50	--	50	17	02. Hrs
Grand Total	450	120	570	--	--

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

9 GUIDELINES FOR INSTRUCTORS AND PAPER SETTERS

1. Due care to be taken for proper & inclusive delivery among the batch. Some of the following methods of delivery of Communications to trainees may be adopted:
 - ◆ LECTURE
 - ◆ LESSON
 - ◆ DEMONSTRATION
 - ◆ PRACTICE
 - ◆ GROUP DISCUSSION
 - ◆ DISCUSSION WITH PEER GROUP
 - ◆ PROJECT WORK
 - ◆ INDUSTRIAL VISIT
2. Maximum utilization of latest form of Technologies to be adapted for the training viz., audio visual aids, integration of IT, etc.
3. The total hours to be devoted against each topic may be decided with due consideration to safety & with prioritizing transfer of required skills.

