

# Preface to Latest (NSQF Level-5 Compliant) Edition

Directorate General of Training (DGT) under the Ministry of Skill Development & Entrepreneurship, being the apex organization for development and coordination of vocational training at the national level, undertakes steps from time to time to improve its various aspects in line with changing market and industry requirements. DGT initiated the process of incorporating the concept of competency based curricula. In order to do so, the curriculum of each CTS trade has been reoriented with appropriate National Skill Qualification Framework (NSQF) level. The curricula of all CTS trades have already been made NSQF compliant.

ELECTRONICS MECHANIC trade has been made NSQF Level 5 compliant under Electronics & Hardware Sector.

New Re-designed syllabus by CSTARI (Central Staff Training and Research Institute) has been recommended by D.G.T., Skill Development and Entrepreneurship Ministry, Govt. of India, Common for 1st Year of all Engineering Trades separately; and sector-wise separate syllabus for 2nd Year.

**The examination pattern for 2nd Year will be of conventional type (not multiple choice questions type), i.e., the trainees will have to draw drawings for the questions asked in the examination paper, whereas MCQs will be asked in examination for 1st Year. Thus, this new edition has been conceived and presented according to these requirements for Annual A.I.T.T. Exam.**

It is hoped that the trainees will definitely be benefited with this effort of mine. We regret for any possible mistake in presentation, printing or editing of the book and suggestions for their removal will be suitably acknowledged.

– Authors

# Contents

Topics	Page No.
--------	----------

NSQF (Level-5) Compliant Competency based Curriculum for Engineering Drawing (Core Skills) ..... (v-vi)

## 1st Year

1. Introduction to Engineering Drawing, its Importance, Relationship to other Drawing Types ..... 3-5	10. Free-Hand Drawings ..... 55-57
2. Drawing Instruments, their Standard and Uses ..... 6-10	11. Method of Presentation of Engineering Drawing ... 58-72
3. Conventional Lines, Breaks and Material Symbols 11-14	12. Symbolic Representation ..... 73-86
4. Practice of Lettering and Title Block ..... 15-18	13. Scale ..... 87-90
5. Drawing Lines of given Length, Straight and Curved ..... 19-20	14. Dimensioning Practice ..... 91-96
6. Drawing Parallel Lines, Perpendicular Lines, Division of Line Segment ..... 21-24	15. Drawing of Solid Figures ..... 97-98
7. Geometrical Figures ..... 25-40	16. Tools and Equipments of Various Trades ..... 99-115
8. Lettering ..... 41-47	17. Projections ..... 116-120
9. Dimensioning Methods ..... 48-54	18. Orthographic Drawing of Simple Fasteners ..... 121-131
	19. Drawing Details of Assembly Drawing ..... 132-139
	20. Reading of Fabrication Drawing ..... 140-143

## MODEL PAPERS (FOR ANNUAL A.I.T.T. EXAM)

Model Papers 1 to 8 [Annual A.I.T.T. Exam (NSQF Level 3/4/5)] ..... 1-19

## 2nd Year

1. CRO (Cathode Ray Oscilloscope) ..... 3-5	19. Digital Electronics ..... 51-61
2. SMD (Surface Mounting Devices) ..... 6	20. Operational Amplifiers (OP-Amp.) ..... 62
3. Electrical Protective Devices ..... 7-10	21. Timer Circuits, ADC and DAC ..... 63-64
4. Electronic Cables and Connectors ..... 11-12	22. Generator ..... 65-66
5. Microcontrollers ..... 13-15	23. Symbols of Electronic Components ..... 67-75
6. Modulation and Receivers Transmitters ..... 16-19	24. Fibre-optic Communications ..... 76
7. Power Supplies and Fitters ..... 20-23	25. Digital Display System ..... 77
8. Sensors and Transducers ..... 24-26	26. Direct to Home (DTH) Transmission System ..... 78
9. Batteries ..... 27-28	27. Cell Phone ..... 79
10. Passive Components ..... 29-33	28. Function Generator and Other Electronic Test Instruments ..... 80-83
11. Transformers and 3-phase system ..... 34-35	29. Project related drawings ..... 84-85
12. Electrical Measuring Instruments ..... 36-37	30. Solar Power and LED Lights ..... 86
13. Junction Diodes and Transistors ..... 38-40	31. LCD and LED TV Receivers ..... 87-91
14. Amplifiers ..... 41-43	32. Public Address System ..... 92-93
15. Oscillators ..... 44-46	33. VCD/DVD Player ..... 94-95
16. Wave Shapping Circuits ..... 47	34. LCD/LED Projector ..... 96
17. Power Electronic Components ..... 48-49	35. Domestic Appliances ..... 97-98
18. Opto Electronic Components ..... 50	

## NEW PATTERN SOLVED ASSIGNMENT

Appendix: 2nd Year Assignment/Test (Solved) (Annual A.I.T.T. Exam – NSQF Level – 5) ..... A.1-A.23