INDIAN TECHNICAL EDUCATION SOCIETY, MUMBAI

CERTIFICATE COURSE
MECHANICAL DRAUGHTSMAN (MD)
PAPER - I

EXAM SCHEME: THEORY PAPER – I (MD – I) - 100 MARKS – 3 HRS.
DRAWING PAPER – II (MD – II) - 100 MARKS – 4HRS.

THEORY SYLLABUS

PREAMBLE :
A Candidate is expected to have technical aptitude, either he must be S.S.C. or have practical experience in drawing office. Candidate should be able to draw freehand sketches.

OBJECTIVES :
To understand the methods of projection, dimensioning etc. To be able to carry out elementary related calculations. To understand details and functions of std. engineering Components.

1. ENGINEERING DRAWING AND CONVENTIONS :

- Drawing instruments and their uses.
  (Aligned and Unidirectional) systems code of practice for general Engg. Drawing of IS 696.
- Symbols for line, conventional method of showing different metals and materials in section e.g. steel, lead, glass, rubber, zinc, wood, concrete etc.
- Conventional methods of showing different broken ends of shafts, round bars, pipes, wood etc.
- Symbols for various forms of welded joints as recommended by I.S.I., gears, springs common features.

2. ENGINEERING MATERIALS :

1 Understand metals and non metals, ferrous metals.
2 Properties and uses of common metals cast iron, wrought iron steel, alloy steel, non ferrous metal.

3. MATHEMATICS :

1 Units and measurements, conversion of units.
2 Menstruations – area, volume of regular solids such as cube, cones, prisms, pyramids, cylinder, sphere etc. To find the area of simple plane figures like triangle, square, parallelogram etc. trigonometric rations-sine, cosine and tangent etc.

4. MEASURING INSTRUMENTS : Instrument reading

1 To understand the principle and construction of vernier & calliper, (inside and outside) micrometer (British and Metric), How to calculate the least count.
Basic measuring instrument like steel rule, measuring tape etc.

5. LIMITS, FITS AND TOLERANCE : Inter changeability knowledge

Definition of limit, tolerance and allowance, types of tolerance, (unilateral and bilateral). Giving tolerance on the manufactured items, higher limit and lower limit, types of fits used in engineering.

6. SCREW THREADS AND THREADED FASTENERS :

1 Different types of triangular thread terms like B.S.W., B.A. Unified metric, B.S.F., B.S.P. also square thread terms like acme, knuckle, buttress etc. Proportions of threads. Left hand and Right hand threads, multi start threads.

2 Types of bolts and nuts, type of screws, types of screw ends and heads, locking arrangements of fasteners, different locking methods, foundation bolts, eye bolts, Rag and Lewis foundation bolts.

7. RIVETS AND RIVETTED JOINTS :

Types of rivets and their proportions types of riveted joints e.g. lap joint, but joint, single or double riveted, single and double cover plates, failure of riveted joints.

8. GEAR AND GEARING: Various types of motion, transmission, belt, chain, pulley, drives

Different terms related to spear such as pitch circle, tooth thickness, pressure angle, addendum, duodenum, circular pitch, diametric pitch and module pitch etc. Basic gear calculations. Different gear systems and types of gear arrangement.

9. Knowledge of machining processes and shop floor activities like assembly inspection, quality control etc.

SCHEME OF EXAMINATION

Paper I Theory	3 Hours	100 Marks

GUIDELINES FOR QUESTION PAPER SETTERS

Q. no.1	Compulsory (Objective type).	20 marks
Q. no.2 to 8	Solve any five questions from Q. 2 to 8 (Subjective type).	16 marks each

The paper setter should take care that (as far as possible) entire syllabus is equally covered.

INDIAN TECHNICAL EDUCATION SOCIETY, MUMBAI

(MD - PAPER – II - DRAWING)

[MD - II / DMES – III / DPDD – I]

THEORY SYLLABUS

1. INTRODUCTION OF DRAWING :-

Use of different drawing instrument, single stroke lettering, Gothic lettering. Types of lines. Dimensioning techniques viz:- Aligned system and Unidirectional system

2. GEOMETRICAL CONSTRUCTIONS :-

Simple geometrical construction such as bisecting a line, arc, perpendicular line, parallel line, dividing a line etc. construction of regular polygon by any one method. Internal and external tangent to a circle, machine handle.

3. SCALE :-

Types of scale, representative fraction (R.F.). Classification of scale i.e. plain scale, Diagonal scale and problems on it, conversions.

4. ENGG. CURVES :-

Construction of ellipse by arc of circle method, rectangle method, oblong method, Parabola by rectangle method, hyperbola, Cycloid, epicycloids hypocycloid, Involutes etc.

5. PROJECTION OF POINT/LINE/PLANES

a) Projection of point in four quadrant.
b) Projection of Lines inclined to one surface plane only and lines in one quadrant.
c) Projections of planes circular, square, rectangular, pentagonal and hexagonal shapes, inclined to one reference plane.

6. ORTHOGRAPHIC PROJECTIONS :

First Angle and third Angle projection methods, drawing orthographic from pictorial view of object.

7. ISOMETRIC PROJECTIONS :-

Isometric scale construction, drawing isometric views from orthographic projections

8. SECTIONAL VIEWS :-

Types of sections like full section, half section, offset sections etc. Interpretation of views i.e. Missing views

9. FREEHAND SKATCHES :-

Application of nuts, bolls, rivets, riveted joint. Screw threads, split pins, keys, couplings etc.

10 ASSEMBLY DRAWING :-

Study the drawings of component of assembly and their relative position in the assembly Assemble the parts and prepare orthographic drawing such as elevation plan, side view inclusive of section and half section views. Prepare the bill of materials.

11. READING OF ENGINEERING DRAWING

12. VARIOUS FINISHING SYMBOLS & MACHINING SYMBOLS, GENERAL SYMBOLS

SCHEME OF EXAMINATION

Paper II Drawing	4 Hours	100 Marks
Sessional Marks		100 Marks

GUIDELINES FOR QUESTION PAPER SETTERS

Q. no.1	Compulsory (Objective type).	20 marks
Q. no.2 to 8	Solve any five questions from Q. 2 to 8 (Subjective type).	16 marks each

The paper setter should take care that (as far as possible) entire syllabus is equally covered.