GEOMETRICAL AND MECHANICAL DRAWING (869)

This subject may not be taken with Geometrical and Building Drawing.

Candidates will be required to reach a minimum standard in the subject as a whole. The use of drawing board, tee-square and set-square will be required. (Candidates may, if they wish, use a drawing board fitted with a parallel motion straight edge. The use of drafting machines will be permitted). A2 size paper will be used. The recommendation of IS:696-1972 Indian Standard, Code of Practice for General Engineering Drawing should be followed.

CLASS XI

There will be one paper of 3 hours duration of 100 marks.

SECTION A

Plane Geometry

Construction and use of scales including diagonal scales. Enlargement and reduction of irregular plane figures. Construction of triangles, quadrilaterals and polygons. Similar plane figures. Problems on circles, tangents and normals. Loci such as the paths of points in simple link mechanisms. Methods of construction of ellipse, including its elementary properties, parabola and rectangular hyperbola; cycloidal and involute curves.

SECTION B

Solid Geometry

Orthographic projection. (Diagrams printed in the question papers may be in either First or Third Angle projections; the projection used will be stated. Solutions in either First or Third Angle projections will be accepted). Projection involving use of auxiliary planes; simple problems on auxiliary projection. Simple problems on the intersection of prisms, pyramids, cylinders, right circular cones, and spheres. Determination of true length of a line in space: sections and surface development of prisms, pyramids, cylinders and right circular cones. Helix treated as a locus with applications on the projection of helices. Isometric and oblique projection without the use of isometric scale.

CLASS XII

There will be one paper of 3 hours duration of 100 marks.

Drawing (Engineering)

Candidates will be required to answer **all** questions.

The preparation of working drawings and assemblies from dimensioned sketches based on the following:

(a) fastening (nuts, bolts, studs, keys, cotters, pins, locking devices);

(b) rigid and flexible joints;

(c) screw threads; their projection and the proportions of standard types, profiles and proportions of spur gear teeth; conventional methods of drawing gear wheels;

(d) transmission of motion and power, bearings, supports, shafts, coupling and clutches;

(e) pressure transmission in pipes using water, oil, steam and gas, joints, unions, tees and bends, expansion joints, pressure packing;

(f) constructional details of prime moves and simple machine tools;

(g) the use of reference points and planes in dimensioning, machining and surface texture symbols;

(h) toleranced dimensions involving the use of IS:919 or B.S. 4500 Limits and Fits for Engineering.

Candidates will be expected to follow the recommendations given in IS:696 - 1972 Indian Standard, Code of Practice for General Engineering Drawing. They should be familiar with both First and Third Angle projections.