COURSE STRUCTURE

CLASS XI (2024-25)

One Paper (Theory):   3 Hours   70 Marks

One paper (Practical): 3 Hours   30 Marks

S. No.	Unit	Marks	Periods
I	**PLANE GEOMETRY** 1. Lines, angles, and rectilinear figures 2. Circles, inscribing and circumscribing of circles	10	25
II	**SOLID GEOMETRY** 3. Orthographic projection of points and lines 4. Orthographic projection of regular plane figures 5. Orthographic projection of right regular solids 6. Section of solids	30	99
III	**MACHINE DRAWING** 7. Orthographic projections of simple machine blocks 8. Isometric projection of laminae (plane figures)	30	50
	Practicals	30	66
	Total Marks	**100**	**240**

THEORY

I. **PLANE GEOMETRY**   **25 Periods**

Printing English alphabets (capital and small) and numerals in standard proportions. Unidirectional/aligned system of dimensioning as per SP 46:2003 (Revised)

7 Periods

Unit 1:   Construction of lines, angles, and their divisions. Simple questions based on triangles, square, rhombus, regular polygons-pentagon, and hexagon.

10 Periods

Unit 2:   Construction of circles, inscribing and circumscribing of circles in equilateral triangle, square, rhombus, regular polygons-pentagon, and hexagon.

8 Periods

II. **SOLID GEOMETRY**   **99 Periods**

Unit 3:   Orthographic projection: dimensioning and conventions strictly as per SP 46:2003 (Revised). Orthographic projection of points and lines.   25 Periods

Unit 4: Orthographic projection of regular plane figures - triangle, square, pentagon, hexagon, circle, and semi-circle.   15 Periods

Unit 5: Orthographic projection of right regular solids such as cubes; prisms and pyramids (square, triangular, pentagonal, and hexagonal); cones; cylinders; spheres; hemi-spheres; frustum of pyramids and cone, when they are kept with their axis (a) perpendicular to HP/VP (b) parallel to HP and VP both.

                                                                                35 Periods

Unit 6: Section of right regular solids such as cubes; prisms and pyramids (square, triangular, pentagonal, and hexagonal); cones; cylinders; spheres, kept with their axis perpendicular to HP/VP, made by a vertical cutting plane.

                                                                                24 Periods

III. MACHINE DRAWING   **50 Periods**

Unit 7: Orthographic projection of simple machine blocks.   25 Periods

Unit 8: Isometric Projection - Construction of isometric scale showing main divisions of 10 mm and smaller divisions of 1 mm each. Isometric projection (drawn to isometric scale) of regular plane figures - triangle, square, pentagon, hexagon, circle, and semi-circle with their surface parallel to HP or VP (keeping one side either parallel or perpendicular to HP/VP).   25 Periods

PRACTICALS   **66 Periods**

1. Making different types of graphic designs/ murals for interior/ exterior decorations in colour using the knowledge of geometrical figures or 3D solids with the use of any Computer Software such as CollabCAD or any equivalent pertinent software.

2. Drawing the following engineering curve through activities - ellipse (by trammel & thread method) on the ground/ drawing sheet/ plywood/ cardboard etc.

3. Developing the following solids with the help of cardboard/ thick paper.
    a) cube, cuboid
    b) prisms & pyramids (triangular, square, pentagonal, and hexagonal)
    c) right circular cylinder and cone

4. Preparing the section of solids (prisms, pyramids, sphere, etc.) with clay, soap-cake, plasticine, wax or with the 3D printing technology. When the cutting plane is: parallel to the base, perpendicular to the base or inclined to the base.

5. Preparing the top-view (plan) of a class-room/lab, home (Drawing Room/Bedroom/ Study Room, Kitchen) drawing different objects therein.

Note:

I. 15 practical (minimum three each from aforementioned five points) are to be assessed.

II. In all the practicals, drawing/sketching of the views should be incorporated and evaluated accordingly.

III. The scheme of evaluation is as follows: