

**ENGINEERING GRAPHICS
COURSE STRUCTURE
CLASS XI (2021-22)**

TERM – 1

S.No.	Unit	Marks
I	PLANE GEOMETRY 1. Lines, angles and rectilinear figures 2. Circles, inscribing and circumscribing of circles	10
II	SOLID GEOMETRY 4. Orthographic projection of points and lines 5. Orthographic projection of regular plane figures 6. Orthographic projection of right regular solids	25
	Practicals	15
	Total Marks	50

THEORY

I. PLANE GEOMETRY

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

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

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

II. SOLID GEOMETRY

Unit 4: Orthographic projection: dimensioning and conventions strictly as per SP 46:2003 (Revised). Orthographic projection of points and lines.

Unit 5: Orthographic projection of regular plane figures - triangle, square, pentagon, hexagon, circle and semi-circle.

Unit 6: 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 (c) parallel to HP and VP both.

PRACTICALS

5 practicals (minimum one from each point) with drawing/sketching of the views.

1. Making different types of graphic designs/ murals for interior/ exterior decorations in colour using the knowledge of geometrical figures with the use of any Computer Software such as Collab-CAD and/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

Note: The scheme of evaluation of practicals is as follows:

(a)	One practical with Drawing/ Sketch	10 Marks
(b)	Sessional Work	3 Marks
(c)	Viva-voce	2 Marks
Total		15 Marks

ACTIVITY

Industrial Visits (one) to any industry/ manufacturing plant to acquaint the students with the present - day methods & technology for better conceptual understanding can be done by virtual tour of the factory/plant due to present situation.

TERM – 2

S.No.	Unit	Marks
III	SOLID GEOMETRY 7. Orthographic projection of section of solids	05
IV	MACHINE DRAWING 8. Orthographic projections of simple machine blocks	18
V	ISOMETRIC PROJECTION 9. Isometric projection of laminae (plane figures)	12
Practicals		15
Total Marks		50

III. SOLID GEOMETRY

Unit 7: 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.

IV. MACHINE DRAWING

Unit 8: Orthographic projection of simple machine blocks.

V. ISOMETRIC PROJECTION

Unit 9: Construction of isometric scale showing main divisions of 10 mm and smaller divisions of 1mm, also showing the leading angles. 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).

PRACTICALS

5 practicals (minimum two from each point) with drawing/sketching of the views.

1. Developing the following solids with the help of cardboard/ thick paper.
 - a) prisms & pyramids (triangular, square, pentagonal and hexagonal)
 - b) right circular cylinder and cone
2. Preparing the section of solids (prisms, pyramids, sphere, etc.) with clay, soap, thermocol, plasticine, wax or any other material (easily and economically available). When the cutting plane is: parallel to the base, perpendicular to the base or inclined to the base.

Note: The scheme of evaluation of practicals is as follows:

(a)	One practical with Drawing/ Sketch	10 Marks
(b)	Sessional Work	3 Marks
(c)	Viva-voce	2 Marks
Total		15 Marks

ACTIVITY

Industrial Visits (one) to any industry/ manufacturing plant to acquaint the students with the present - day methods & technology for better conceptual understanding can be done by virtual tour of the factory/plant due to present situation.