R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT
(An Autonomous College U/s UGC Act 1956)

B. Tech. SEMESTER- II, SEMESTER END EXAMINATION – SUMMER 2025

Subject Code: 1ME201	**Date: 23-05-2025**
Subject Name: ENGINEERING GRAPHICS & DESIGN	
Time: 11:00 AM to 02:00 PM	**Total Marks: 70**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **35 marks**, with a total of **70 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A

		Marks	BL	CO
Q.1	**Multiple-Choice Questions**	**[05]**		
(a)	Representative fraction is ratio of	1	R	1

    (i) Maximum length/Minimum length   **(ii)** Actual length of object/Length of object in drawing

    (iii) Length of object in drawing/Actual length of object   **(iv)** All of these

(b)	When the plane cuts the cone parallel to the generator, the curve traced out is	1	U	1

    (i) Ellipse   arabola

    (iii) Hyperbola   Ꮐriangle

(c)	If a point is kept on the V.P., it's top view will be-	1	A	2

    (i) On the XY line   **(ii)** Above XY line

    (iii) Below XY line   **(iv)** None of the above

(d)	If a line is parallel to H.P. it's F.V. will be-	1	A	2

    (i) Inclined to the XY line   **(ii)** Perpendicular to the XY line

(iii) Parallel to the XY line   **(iv)** None of the above

(e) If a line is inclined to the Vertical Plane and parallel to Horizontal Plane, then which of the following statements is always CORRECT?   **1   A   2**

    (i) True Length = Plan Length   **(ii)** True Length # Plan Length

    (iii) True Length > Elevation Length   **(iv)** True Length = Elevation Length

Q.2	**Attempt Any Two**	**[10]**		
(a)	Draw Hexagon using universal circle method for the its side of 50 mm.	**5**	**A**	**1**
(b)	Construct a diagonal scale of R.F.=1/36 showing yard, foot and inch. Scale should be long enough to measure 5 yards. Indicate on it 3 yards 2 feet 9 inches.	**5**	**A**	**1**
(c)	Draw a cycloid for a rolling circle, of 60 mm diameter rolling along a straight line without slipping. Take initial position of the tracing point at the bottom of the vertical center line of the rolling circle. Draw tangent and normal to the curve at a point 35 mm above the directing line.	**5**	**A**	**1**
Q.3	**Attempt Any Two**	**[10]**		
(a)	Draw an ellipse having major axis 120mm and minor axis 80mm. Use concentric circle method.	**5**	**A**	**1**
(b)	Draw the projection of following points by keeping 20 mm distance between projectors.	**5**	**A**	**2**

      i.   Point P 25mm above H.P. and 20mm in front of V.P.

     ii.   Point Q 20mm behind V.P. and 15mm above H.P.

    iii.   Point R 25mm below H.P. and 15mm behind V.P.

    iv.   Point S 25mm in front of V.P. and 20mm below H.P.

     v.   Point T on H.P. and 20 mm in front of V.P.

|				
(c)	A circular plane of 50mm diameter is perpendicular to HP and VP. The center of plane is 30mm above HP and 35mm in-front of VP. Draw its projection.	**5**	**A**	**2**
Q.4	**Attempt Any Two**	**[10]**		
(a)	A line PQ is 100mm long and making an angle 40° with HP has its end P in the HP and 12mm in front of VP. The distance between end projectors is 36mm. Draw the projections of line PQ and determine its inclinations with HP and VP. Assume end point Q the first quadrant.	**5**	**A**	**2**

(b) A line PQ 100 mm long is inclined at an angle of 40° to HP and 30° to VP. **5 A 2**
One of its end point 'P' is in HP as well as VP. Determine its apparent
inclination with VP.

(c) A line AB, 50 mm long is inclined to V.P. at an angle of 30°. Its end point A **5 A 2**
is 12 mm above the H.P. and 20 mm in-front of the V.P. Line AB is contained
by a plane perpendicular to V.P. and making an angle of 45° to the H.P. Draw
the projections of the line. Find the inclination of the line with H.P.

SECTION B

	Marks	**BL**	**CO**

Q.5 Multiple-Choice Questions **[05]**

(a) The Front View of an elliptical plane maybe **1 U 2**

    (i) an ellipse   **(ii)** straight line

    (iii) a circle   **(iv)** Anyone above the mentioned

(b) A pentagon is placed perpendicular to the horizontal plane and inclined to **1 U 2**
profile plane which of the following is true.

    (i) Front view-line, top view-   **(ii)** Front view- pentagon, top view-
        pentagon   line
    (iii) Front view –line, top view-   **(iv)** Top view-line, side view- line
        line

(c) A cube is rested on H.P on one of its base such that base's diagonal is **1 U 3**
perpendicular to V.P and section plane is parallel to V.P the section will be a
_____.

    (i) triangle   **(ii)** rectangle

    (iii) trapezium   **(iv)** parallelogram

(d) The hidden parts inside or back side of object while represented in **1 R 4**
orthographic projection are represented by which line?

    (i) Continuous thick line   **(ii)** Continuous thin line

    (iii) Dashed thin line   **(iv)** Long-break line

(e) In 3rd angle projection the _____ lies between _____ and _____. **1 R 4**

    (i) object, projection plane, observer

    (ii) projection plane, object, observer

    (iii) reference line, side view, front view

    (iv) reference line, left side view, right side view

Q.6 Attempt Any Two **[10]**

(a) A hexagonal plane side 25mm is resting on one of its sides in the HP in such a way that the side on which it rests makes an angle of 30∘ with the VP. The plane makes an angle of 45∘ with the HP. Draw the projections. **5 A 2**

(b) ABCD is a rhombus of diagonals AC =100 mm and BD=70 mm. Its corner A is in the H.P. and the plane is inclined to the H.P. such that its plan appears to be a square and the plan of the diagonal AC makes an angle of 20° to the V.P. Draw the projections of the plane and find its inclination with the H. P. **5 A 2**

(c) ABC is an equilateral triangle of side 60 mm long. Its corner A is on HP and side BC is 20 mm above HP. Draw the projections of the triangle when side BC is inclined to VP at an angle of 50°. **5 A 2**

Q.7 Attempt Any Two **[10]**

(a) A Hexagonal prism is resting on one of its sides of base (30 mm). Such that axis (60 mm) is inclined at 45° to HP. And the side on which it is resting inclined at 30° to VP. Draw the projections. **5 A 3**

(b) A pentagonal prism of side length of base 30mm and height 60mm is resting on HP with one edge of base perpendicular to VP. It is cut by an Auxiliary Inclined Plane include at 40° to HP and bisecting the axis. Draw sectional top view, sectional side view and true shape of the section. **5 A 3**

(c) A cylinder base diameter 50 mm and axis length 70 mm is kept on the HP on a point of its base circle in such a way that its axis makes an angle of 30° with HP. Draw the projections of the cylinder when plan of axis is making 45° to the XY line. **5 A 3**

Q.8 Attempt Any Two **[10]**

(a) Draw the Sectional Elevation, Plan and Left-hand side view of Figure according to Third Angle projection method. **5 N 4**
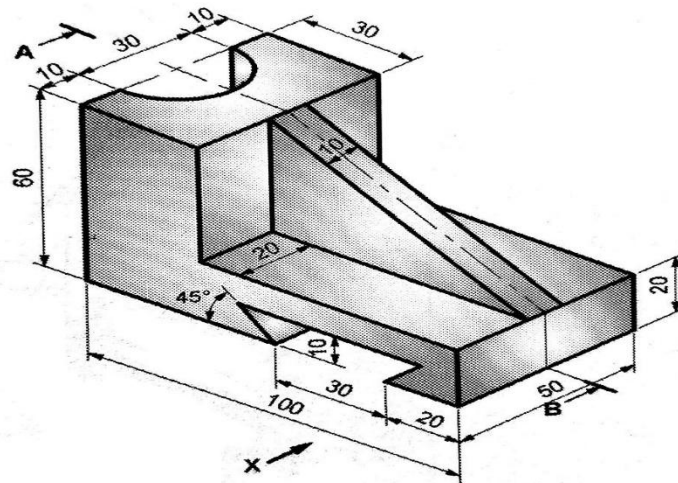
(b) Draw Left side view, elevation, and plan of Figure according to first Angle projection method.

5 N 4
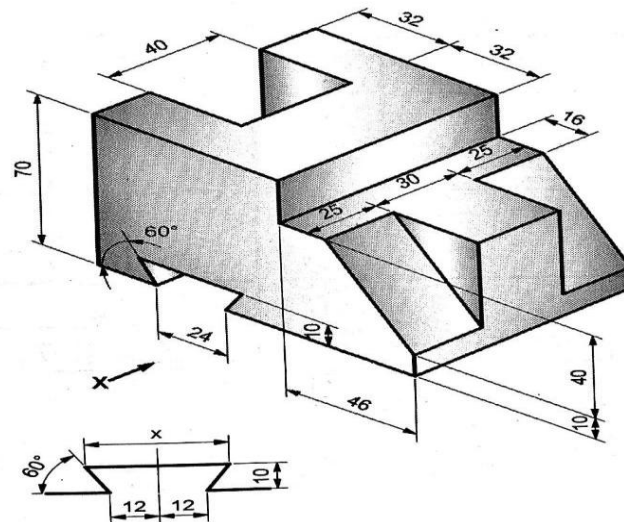
(c) Fig. shows pictorial view of an object. Draw the front view, top view and side view. Use first angle projection method.

5 N 4

****