Enrolment No/Seat No.: _____

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT

(An Autonomous Institute U/s UGC Act 1956)

B.TECH. SEMESTER-II, SEMESTER END EXAMINATION – WINTER 2025

SUBJECT CODE: 1ME201 **DATE: 08-01-2026**

SUBJECT NAME: ENGINEERING GRAPHICS AND 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) Which conic section has an eccentricity (e) less than 1 (e < 1)?	**1**	**R**	**1**
(i) Drawing vertical lines **(ii)** Hyperbola			
(iii) Circle **(iv)** Ellipse			
(b) If the RF of a scale is greater than 1:1, the scale is classified as	**1**	**U**	**1**
(i) Reducing scale **(ii)** Enlarging scale			
(iii) Full scale **(iv)** Diagonal scale			
(c) What is the primary use of a compass in engineering drawing?	**1**	**R**	**1**
(i) Drawing vertical lines **(ii)** Drawing circles and arcs			
(iii) Measuring angles **(iv)** Drawing hidden lines			
(d) The projection on the Vertical Plane (VP) is also known as the.	**1**	**U**	**2**
(i) Top View or Plan **(ii)** Side View or End View			
(iii) Front View or Elevation **(iv)** Auxiliary View			

(e) The line of intersection between the Horizontal Plane (HP) and the Vertical Plane (VP) is called **1 U 2**

(i) Ground Line **(ii)** Reference Line (XY line)

(iii) Center Line **(iv)** Axis Line

Q.2 Attempt Any Two **[10]**

(a) Construct a diagonal scale with the scale 1 cm = 0.5 km. Showing kilometer, hectometer and decameter. Scale should be long enough to measure upto 5 kms. Indicate on the scale the distance of 3 kms 7 hm 8 dam. **5 A 1**

(b) Draw a parabola having base length 90mm and axis height 50mm by the rectangle method. **5 A 1**

(c) Construct the Involute of circle of 30 mm diameter for one turn. Draw tangent and normal to the Involute at any point on it. **5 A 1**

Q.3 Attempt Any Two **[10]**

(a) Draw the projection of following points by keeping 20 mm distance between projectors. **5 A 2**

(i) Point **A** 25mm above H.P. and 20mm in front of V.P.
(ii) Point **B** 20mm behind V.P. and 15mm above H.P.
(iii) Point **C** 25mm below H.P. and 15mm behind V.P.
(iv) Point **D** 25mm in front of V.P. and 20mm below H.P.
(v) Point **E** on H.P. and 20mm in front of V.P.

(b) Draw the projection of following points by keeping 20 mm distance between projectors. **5 A 2**

(vi) Point **P** on H.P. and 20mm in front of V.P.
(vii) Point **Q** 30mm behind V.P. and 15mm below H.P.
(viii) Point **R** in V.P. and 25mm below H.P.
(ix) Point **S** 30mm in front of V.P. and 25mm above H.P.
(x) Point **T** in H.P. and in V.P.

(c) differentiate between first angle and third angle projection method **5 U 2**

Q.4 Attempt Any Two **[10]**

(a) A line AB 80mm long is inclined at 30° to HP and 45° to VP. Its end 'A' is 20mm above HP and 20mm in front of VP. Draw its projections. **5 A 2**

(b) The front view and top view of a line MN is inclined at an angle of 30° and 40° respectively. The front view of line MN measures 50 mm. Point M is 15 mm above H.P. and 10mm in front of V.P. Draw the projections of line MN and find the true length of line MN. **5 A 2**

(c) A line AB, 70 mm long is inclined at an angle of 45° to the H.P. and 30° to the V.P. Its end point 'A' is on the H.P. and 25 mm infront of the V.P. Draw the projections of the line AB assuming it to be in the first quadrant. **5 A 2**

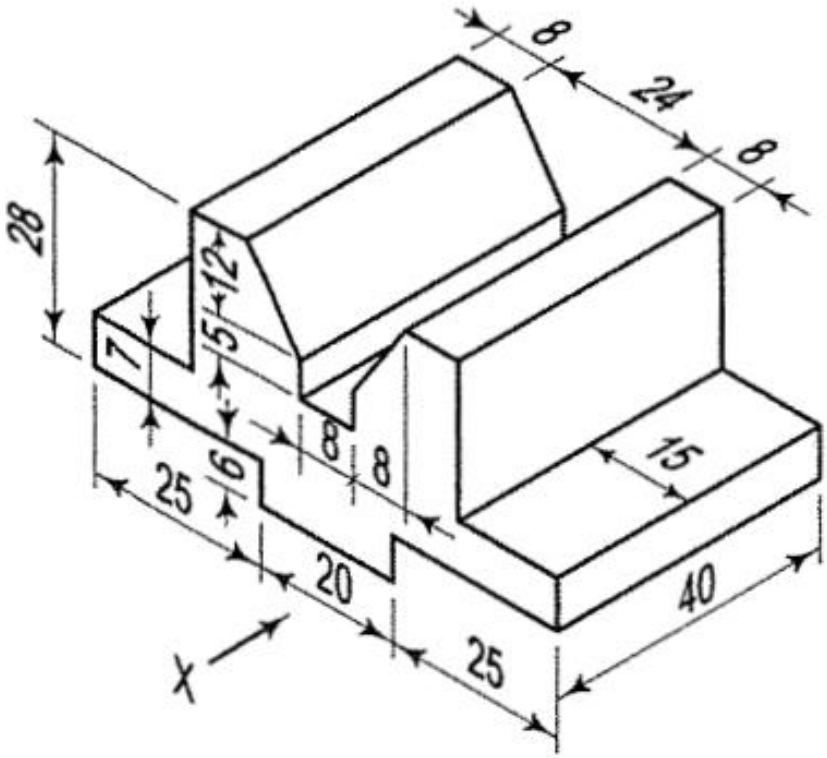
SECTION B

		Marks	BL	CO
Q.5	**Multiple-Choice Questions**	**[05]**		
(a)	How many pairs of parallel lines are there in regular Hexagon?	**1**	**U**	**1**
	(i) 2 **(ii)** 3			
	(iii) 6 **(iv)** 1			
(b)	In first angle projection method, object is assumed to be placed in	**1**	**U**	**2**
	(i) First quadrant **(ii)** Second quadrant			
	(iii) Third Quadrant **(iv)** Fourth quadrant			
(c)	When the projectors are parallel to each other and also perpendicular to the plane, the projection is called	**1**	**U**	**2**
	(i)perspective projection **(ii)**oblique projection			
	(iii)isometric projection **(iv)**orthographic projection			
(d)	The hidden parts inside or back side of object while represented in orthographic projection are represented by which line?	**1**	**U**	**2**
	(i) Continuous thick line **(ii)**Continuous thin line			
	(iii) Dashed thin line **(iv)**Long-break line			
(e)	When the axis of solid is perpendicular to H.P, the _____view should be drawn first and ____ view then projected from it.	**1**	**U**	**3**
	(i) front , top **(ii)** top, side			
	(iii) side, front **(iv)** top, front			
Q.6	**Attempt Any Two**	**[10]**		
(a)	A 30°- 60° set square has its shortest edge 50 mm long and is in the Hp. The TV of the set square is an isosceles triangle. Draw projections with the hypotenuse of the set square inclined at 45° to the VP.	**5**	**A**	**2**
(b)	A regular pentagon of 30 mm sides is resting on HP on one of its sides with its surface 45° inclined to HP. Draw it's projections when the side in HP makes 30° angle with VP.	**5**	**A**	**2**
(c)	A circle of 50 mm diameter is resting on HP on end A of its diameter AC which is 300 inclined to HP while its TV is 450 inclined to VP. Draw its projections.	**5**	**A**	**2**
Q.7	**Attempt Any Two**	**[10]**		

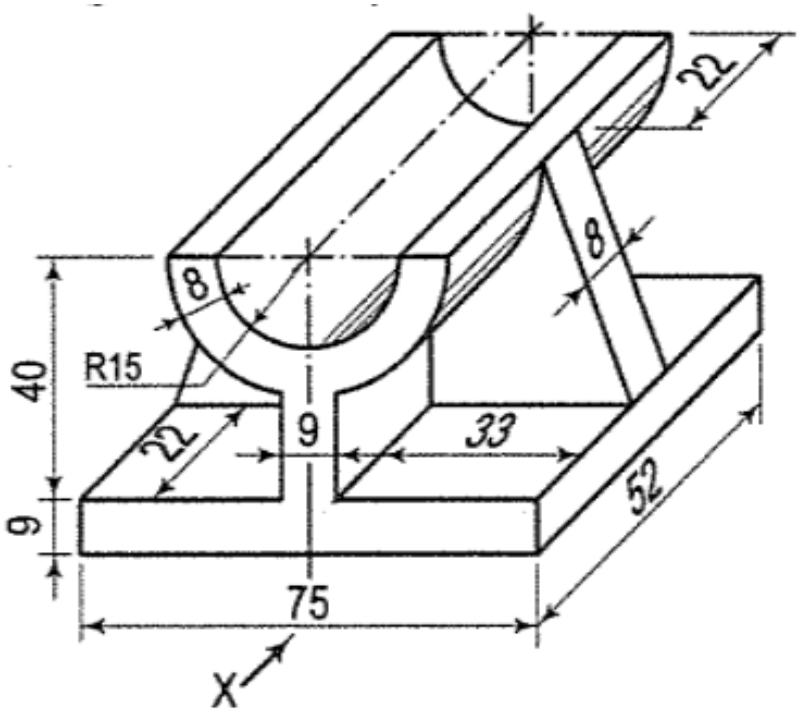
(a)	A cone of base 60 mm diameter and the axis 80 mm long lies on HP with its axis inclined at 45° and 30° to HP and VP, respectively. Draw the top and front views of the cone.	**5**	**A**	**3**
(b)	A cube of 30 mm side rests with one of its edges on HP such that one of the square faces containing that edge is inclined at 300 to HP and the edge on which it rests being inclined to 600 to VP. Draw its projections.	**5**	**A**	**3**
(c)	Draw the top and front views of a rectangular pyramid of sides of base 40x 50 mm and height 70 mm when it lies on one of its larger triangular faces on HP. The longer edge of the base of the triangular face lying on HP is inclined at 600 to VP in the top view with the apex of the pyramid being nearer to VP.	**5**	**A**	**3**

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

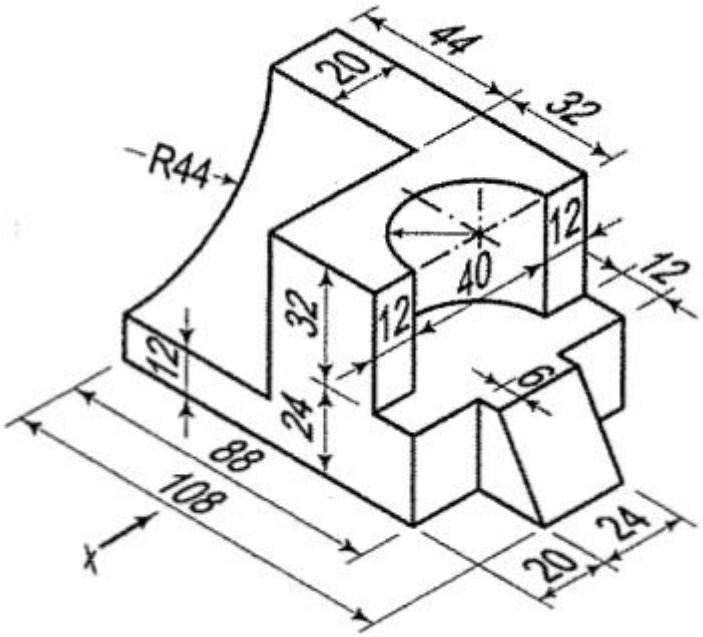
(a)	**Draw front view and top view.**	**5**	**A**	**4**



(b)	**Draw front view and side view.**	**5**	**A**	**4**



(c) Draw front view and top view. **5 A 4**



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