

# GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem-II Remedial Examination, September 2009

**Subject code: 110013**

**Subject Name: Engineering Graphics**

**Date: 11/09/2009**

**Total Marks: 70**

**Time: 03:00 pm-06:00 pm**

**Instructions:**

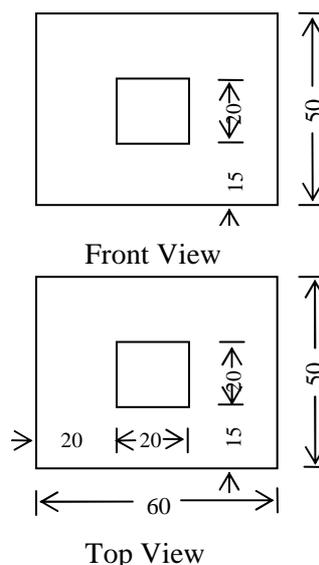
1. Write seat no. and enrolment no. at given location on question paper.
2. Attempt all questions.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.
5. Retain all the construction/ projection lines.
6. Figures drawn in the question paper are not to the scale.

- Q.1**
- (a) Define Representative Fraction. Construct a plain scale of R.F.= 1:50 to show meters and decimeters and long enough up to 8 meter. Indicate 6.7 m distance on scale. **04**
  - (b) Explain (i) Systems of Dimensioning, (ii) Importance of Sections of solids. **04**
  - (c) Construct an ellipse when the distance of the focus from the directrix is equal to 60 mm and eccentricity is 2/3. **06**

- Q.2**
- (a) Construct Isometric scale. **02**
  - (b) **Figure-1** shows front view and top view of an object. Draw isometric view. **05**
  - (c) An inelastic string 150 mm long has its one end attached to the circumference of a circular disc of 35 mm diameter. Draw the curve traced out by other end of the string, when it is completely wound round the disc, keeping always tight. Name the curve. **07**

**OR**

- (c) A circle of 50 mm diameter rolls on another circle of 175 mm diameter, outside it. Trace the locus of a point on the circumference of the rolling circle for one complete revolution. Name the curve. **07**



**Figure-1**

- Q.3** (a) The projectors of the ends of a line AB are 50 mm apart. The end A is 20 mm above horizontal plane (H.P.) and 30 mm in front of the vertical plane (V.P.). The end B is 10 mm below H.P. and 40 mm behind V.P. Determine the true length of AB and its inclination with H.P. **07**
- (b) In a slider crank mechanism the connecting rod AB is 120 mm long and crank OA is 40 mm long. The end B moves along the straight line passing through O. Trace the locus of point P, 45 mm from A, along the connecting rod for one revolution of crank OA. **07**
- OR**
- Q.3** (a) A line PQ, 80 mm long has its end P 15 mm above the H.P. Line makes an angle of  $30^{\circ}$  with the H.P. and  $45^{\circ}$  with the V.P. End Q of the line is 10 mm in front of V.P. Draw the projections of the line considering it in first quadrant. **07**
- (b) A circular disc of diameter AB = 90 mm, rotates with uniform angular velocity. The point P which is at A, moves with uniform linear velocity and reaches the point B, when the disc completes one revolution. Trace the locus of point P moving from A to B. **07**
- Q.4** (a) A regular pentagonal plate of 45 mm sides has one of its corners on H.P. The plane of the pentagon is inclined at  $45^{\circ}$  to the H.P. The side of the pentagon which is opposite of the corner, which is on H.P., is inclined at  $30^{\circ}$  to the V.P. Draw projections of the plane. **07**
- (b) A cone, base diameter 60 mm and axis length 60 mm is kept on H.P. on its base. It is cut by a plane in such a way that the true shape of the section is an isosceles triangle of base 40 mm. Draw front view and sectional top view. **07**
- OR**
- Q.4** (a) A thin rectangular plate of 60 x 30 mm has its shorter side in the V.P. and inclined at  $30^{\circ}$  to the H.P. Project its top view, if its front view is a square of 30 mm long sides. **07**
- (b) A hexagonal pyramid, base 25 mm side and axis 55 mm long, has one of its slant edges on the H.P. A plane containing that edge and the axis is perpendicular to the H.P. and inclined at  $45^{\circ}$  to the V.P. Draw its projections when the apex is nearer to V.P. than the base. **07**
- Q.5** (a) Draw front view and top view of the object shown in **Figure-2** according to third angle projection method. **07**
- (b) A square pyramid, sides of base 30 mm and axis length 50 mm is kept on the H.P. on its base with all sides of base equally inclined to V.P. It is cut by a plane inclined at  $45^{\circ}$  to H.P., perpendicular to V.P. and bisecting the axis. Develop the surfaces of pyramid. **07**
- OR**
- Q.5** (a) Draw front view and left hand side view of the object shown in **Figure-2** according to first angle projection method. **07**
- (b) A right circular cylinder of 70 mm diameter and 90 mm height is standing on its base. A hole of 45 mm diameter is cut through it in such a way that the axis of the hole is parallel to H.P. and perpendicular to V.P. and bisecting the axis of the cylinder. Develop the surface of cylinder. **07**

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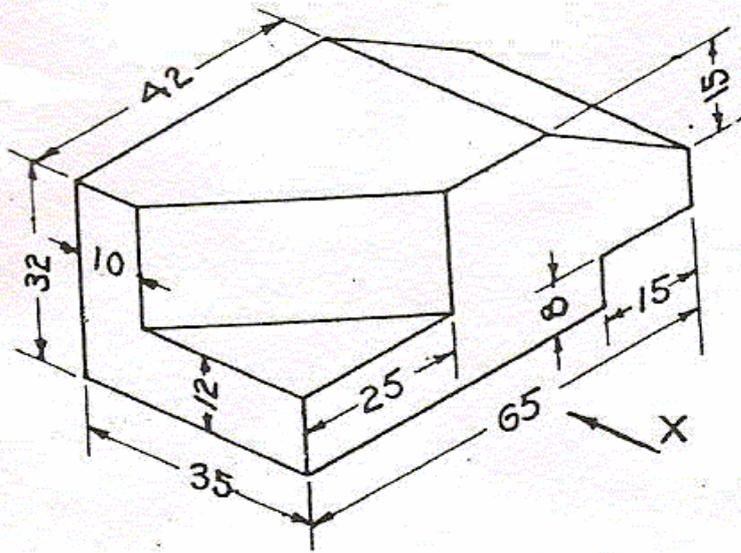


Figure-2