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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– I & II (NEW) EXAMINATION – WINTER 2019

Subject Code: 3110013   **Date: 09/01/2020**

Subject Name: Engineering Graphics & Design

Time: 10:30 AM TO 01:30 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

                                                                                                            Marks

Q.1 (a) Construct a scale of 1cm = 1 m to read meters and decimeters and long enough to measure up to 14 meters. Show on this scale a distance equal to 12.4 meters.   **03**

(b) OAB is a slider crank mechanism. Slider B is sliding on a straight path passing through O as shown in Figure 1 given below. Crank OA is 30 mm and rotates in anticlockwise direction and length of connecting red AB is 100 mm. A rod NP of 30 mm length is attached to AB such that AN = 40 mm and NP is perpendicular to AB as shown Draw locus of point P for one complete revolution of the crank.   **04**
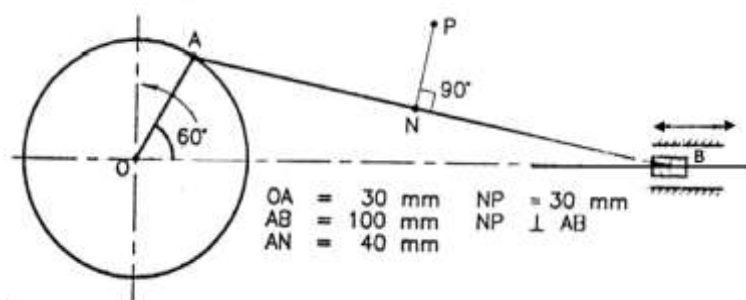

Figure 1.

(c) Draw a parabola by tangent method, given its base as 90 mm and the height of axis is 75 mm.   **07**

Q.2 (a) A rectangle ABCD 60 mm x 40 mm, is parallel to HP with one of its sides inclined at 30º to VP and the end of the side near to VP is 15 mm in front of the VP and 30 mm above HP. Draw its projections.   **03**

(b) Point A is 20 mm above HP and 30 mm in front of VP and point B is in the HP and 40 mm behind the VP. The distance between in their projectors is 50 mm. Draw the projections of the points. Also draw straight lines joining their top and front views.   **04**

(c) The end P of a line PQ 120 mm long is 30 mm above HP and 60 mm behind VP. The line is incline at angle of 30º with the reference plans of the projection. The point Q is below HP and behind VP. Draw the projections of line PQ and locate the point Q.   **07**

OR

(c) Plan and elevation of a line AB, 80 mm long, measure 60 mm and 72 mm respectively. End A of the line is in HP and end B is in VP. Draw its projections, assuming the line to lie in first quadrant.   **07**

                                                                                                                              1

Q.3 **(a)** What is the difference between a First Angle and Third Angle projection? **03**

(b) A right regular pentagonal pyramid, edges of base 25 mm and height 50 mm, has its base parallel to VP with one of its base edges in HP. Draw its projections. (FV and TV) **04**

(c) A regular hexagon lamina ABCDEF has a side AB in VP and its side DE 45 mm in front of the VP and inclined to HP at 30°. Draw its projections. Consider size of lamina as 50mm. **07**

OR

Q.3 **(a)** Draw the conventional symbols for First Angle and Third Angle projection. **03**

(b) A right regular pentagon prism, edge of base 30 mm and height 75 mm resting on its base on HP, is cut by a section plane inclined to HP at 45° and meeting the axis at a distance of 18 mm from its top end. Develop the outside surface of the cut prism. **04**

(c) Draw the projections of rhombus diagonals 96 mm and 48 mm long. The smaller diagonal is parallel to both the reference planes, while the other diagonal is inclined at 30° to the HP and has one of its end points in the HP. Keep the center of rhombus 56 mm in front of the VP. **07**

Q.4 **(a)** Write difference between line, polyline and its uses in AUTOCAD. **03**

(b) List and explain different methods to draw arc in AUTOCAD. **04**

(c) One of the rectangular faces of the vertical square prism, 40 mm side and axis 65 mm long, make an angle of 30° to VP. It is cut by an AIP passing through the center of the axis in making an angle of 40° to HP. Draw front view, sectional top view and true shape of the section. **07**

OR

Q.4 **(a)** List the six Essential Commands of Modify Panel in AutoCAD. **03**

(b) List and explain different methods to draw Polygon in AUTOCAD. **04**

(c) A square pyramid, side of base 40mm and axis 60 mm long, has its base in HP and all edges of the base are equally inclined to VP. It is cut by a section plane perpendicular to the VP and inclined 45° to the HP such that it bisect the axis. Draw its sectional top view and sectional left side view. **07**

Q.5 **(a)** Draw the isometric scale of 80 mm long line and show 66 mm isometric length on it. **03**

(b) Draw the isometric view of the cone of 48 mm base diameter and 56 mm axis height. **04**

(c) Draw and dimension completely, the following views according to first angle projection method and to full size scale of a given figure 2. **07**
- Front view looking in the direction of arrow F,
- Side view looking direction of arrow S,
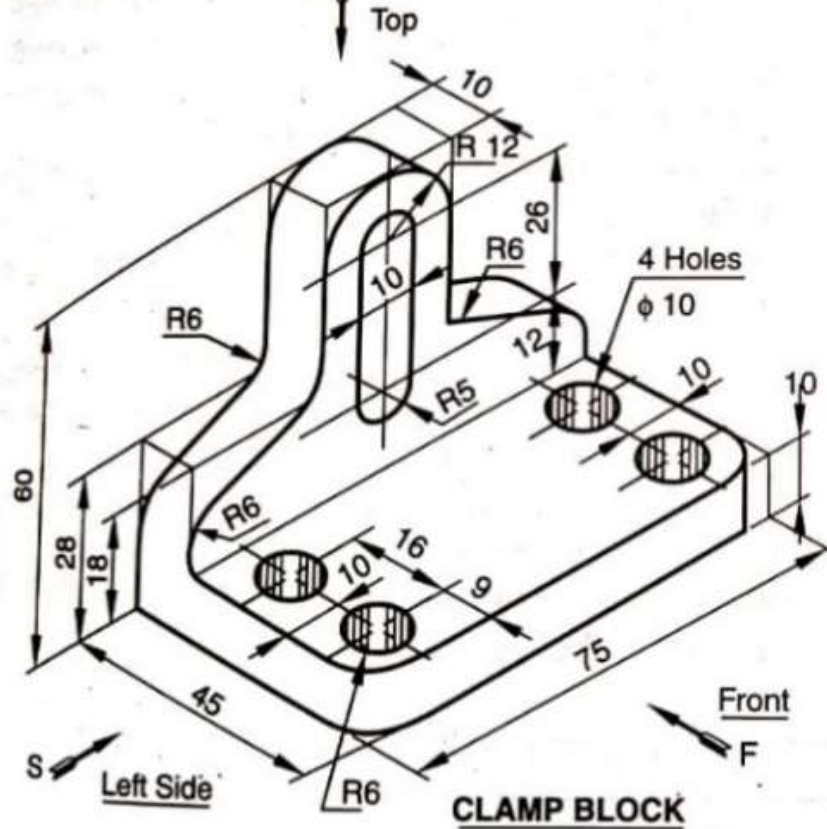- Top view looking the direction of arrow P.

Figure 2.

OR

Q.5 **(a)** Draw the front view looking in direction of arrow according to first angle projection method to full size scale of a given figure 3 with completely dimension. **03**
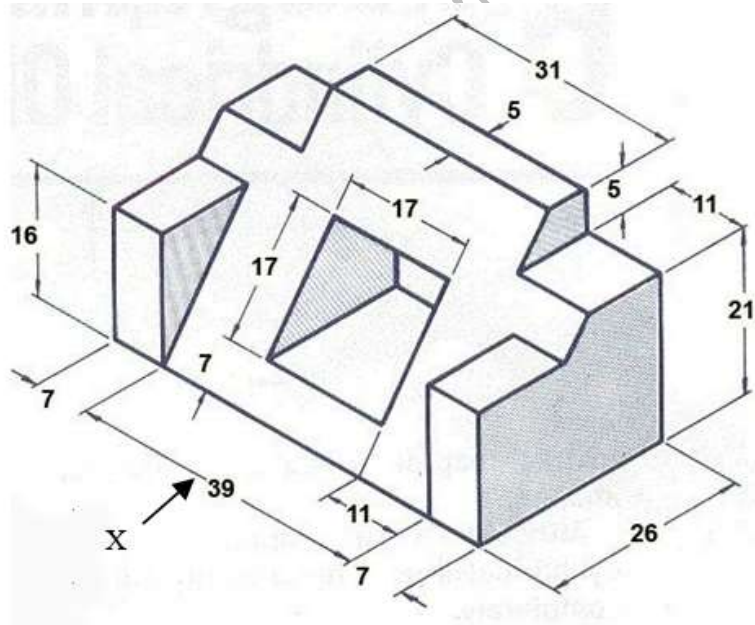

Figure 3.

(b) Draw and dimension completely, the following view according to First angle projection method and to full size scale of a given figure 3. **04**

- Top View and right hand side view.

3

(c) Figure 4 shows three orthographic views according to first angle projection **07** method of an object. Draw its isometric projection.
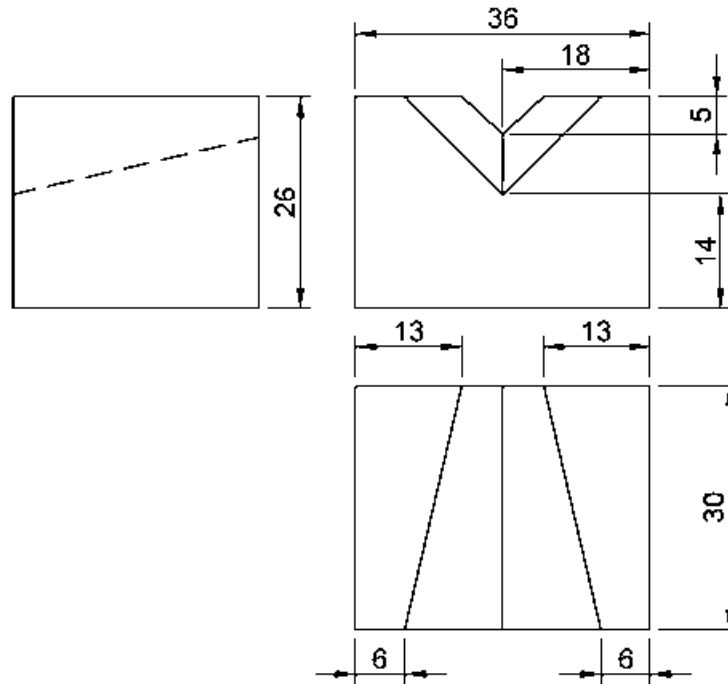

Figure 4.
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