

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-1/2 EXAMINATION – WINTER 2021****Subject Code:3110013****Date:28/03/2022****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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) (i) Which type of line is used to indicate long break line (continuous thin with zig-zags line)? **3**  
(ii) Which type of line is used to indicate hidden lines (dashed medium thick line)?  
(iii) What is Representative Fraction/Scale Factor?
- (b) The foci of an ellipse are 110 mm apart. The minor axis is 70 mm long. Determine the length of major axis and draw half ellipse by rectangular method. **4**
- (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. **7**
- Q.2** (a) Draw the projections of the following points on the same X-Y line. **3**  
(1) Point A 25 mm below H.P. and 20 mm in front of V.P.  
(2) Point B 35 mm above H.P. and 40 mm in front of V.P.  
(3) Point C on V.P. and 30 mm above H.P.
- (b) The foci of an ellipse are 110 mm apart. The minor axis is 70 mm long. Draw half ellipse by concentric circle method. **4**
- (c) 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. **7**

**OR**

- (c) Construct the involute of a hexagon of side 20 mm. Draw tangent and normal to the involute at any point. **7**
- Q.3** (a) Draw projection of line CD is 50 mm long, when it is not contained by any plane and parallel to both planes. A line CD is 20 mm above H.P. and 25 mm in front of V.P. **3**
- (b) A circular plane having 50 mm diameter is resting with point A of its periphery on H.P. The surface of plane is inclined with  $30^\circ$  to H.P. Draw the projection of this circular plane. **4**
- (c) A straight line AB 110 mm long is inclined at  $30^\circ$  to H.P. and  $45^\circ$  to V.P. One of its end A is 40 mm from the V.P. and 20 mm above H.P. Draw the projection of line AB. **7**

OR

- Q.3** (a) A line PQ 130 mm long is parallel to the V.P. and inclined at  $60^\circ$  to H.P. The end nearest to the H.P. is 30 mm from it and 40 mm from the V.P. Draw the projection of line PQ. 3
- (b) A rectangular plane ABCD having 60 mm  $\times$  30 mm size is parallel to H.P. and perpendicular to V.P. and P.P. Draw the projections of the rectangular when it is 40 mm above H.P. and one of the longer sides is parallel to V.P. and 20 mm in front of it. 4
- (c) A square plane ABCD is of 30 mm side. It is kept on V.P. on one of its corner and it is inclined to V.P. at an angle of  $30^\circ$ . The surface of the plane is perpendicular to H.P. Draw the projection of plane 7
- Q.4** (a) Draw the following sketches: Truncated Cylinder, Frustum of a cone and Frustum of a square pyramid. 3
- (b) A square prism edge of base 35 mm and axis length 50 mm is resting on its base on the H.P. with an edge of base parallel to V.P. Draw the projection of prism. 4
- (c) Draw the development of lateral surfaces of a pentagonal prism with edge of base 40 mm and height 90 mm, kept on H.P. on its edge of base with an angle of base parallel to V.P. When it is cut by an AIP inclined at  $30^\circ$  to H.P. and bisecting the axis of the prism. Refer Figure No 1 7

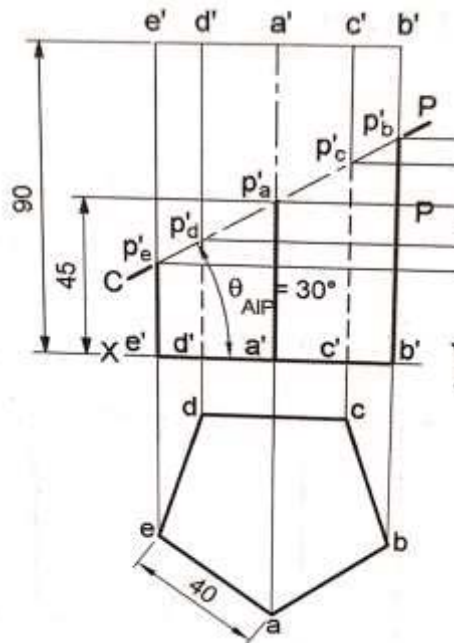


Figure No 1

OR

- Q.4** (a) A square prism side of base 30 mm and its axis is 50 mm is kept on H.P. on its base such that two side of base are perpendicular to V.P. It is cut by the horizontal cutting plane which cuts the axis at its midpoint. Draw front view and sectional top view. 3
- (b) Differentiate isometric projections and orthographic projections. 4

- (c) Figure No. 2 shows pictorial view of an object. Draw Front view looking in the direction F and also draw any one side view. 7

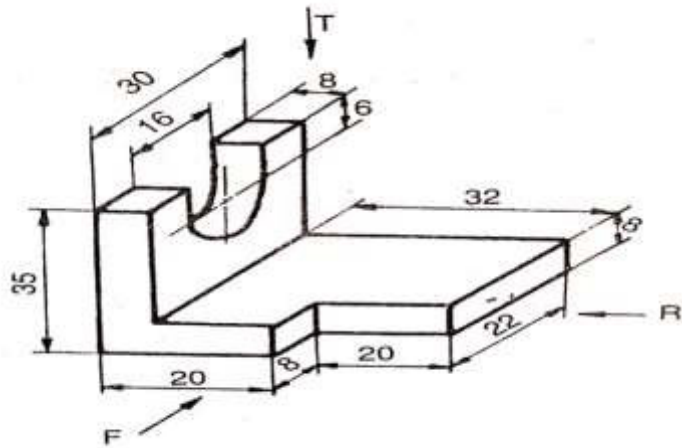


Figure No. 2

- Q.5 (a) Draw the pictorial view of truncated hexagonal pyramid. 3  
 (b) What are the various applications of Auto CAD? 4  
 (c) Figure No. 3 shows pictorial view of an object. Draw Front view looking in the direction F and also draw any one side view. 7

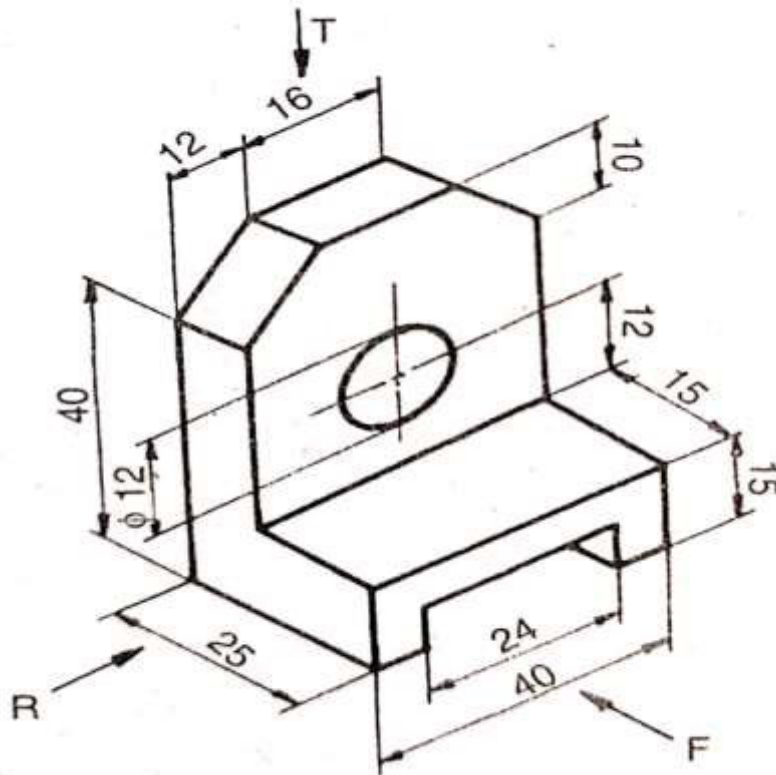


Figure No. 3

OR

- Q.5** (a) State some of important command use in auto CAD. 3  
(b) What are the various advantages of Auto CAD? 4  
(c) Figure No. 4 shows front view and top view of an object. Draw isometric 7  
view. Total height cover by the object is 60 mm.

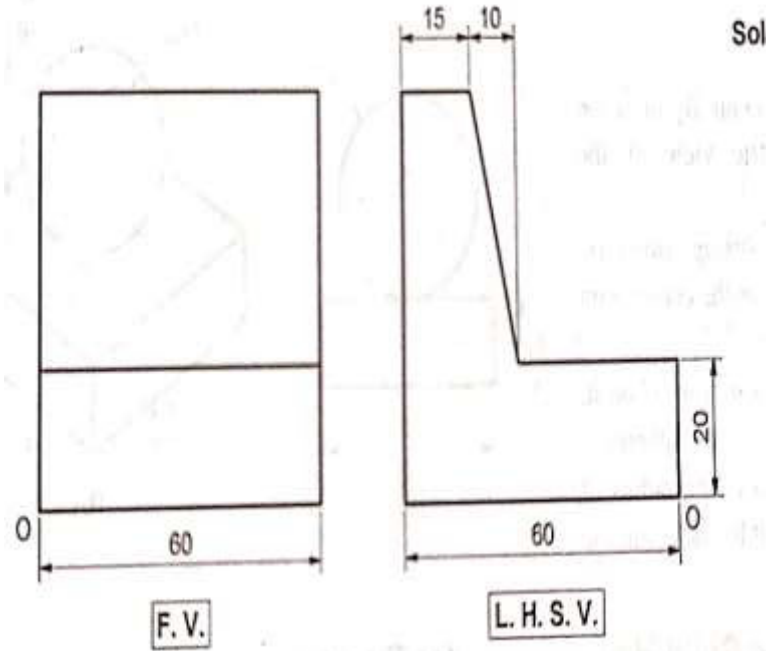


Figure No. 4

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