Code : 100102

B.Tech 1st Semester Exam., 2018 (New)

ENGINEERING GRAPHICS AND DESIGN

Time : 3 hours   Full Marks : 70

Instructions :

(i) *The marks are indicated in the right-hand margin.*

(ii) *There are **NINE** questions in this paper.*

(iii) *Attempt **FIVE** questions in all.*

(iv) *Question No. **1** is compulsory.*

1. Choose the correct option of the following (any *seven*) :   2×7=14

    (a) The size 210 mm × 297 mm of drawing sheet recommended by the Bureau of Indian Standard is for

        (i) A1

        (ii) A2

        (iii) A3

        (iv) A4

(2)

    (b) Continuous thin line is used for

        (i) dimension line

        (ii) extension line

        (iii) hatching

        (iv) All of the above

    (c) Which one is the enlarging scale?

        (i) 1 : 1

        (ii) 1 : 2

        (iii) 1 : 10

        (iv) 100 : 1

    (d) In first angle projection method

        (i) object is placed in between observer and projection plane

        (ii) projection plane is assumed to be transparent

        (iii) observer is in between the object and the plane

        (iv) None of the above

(e) Top view is projected on the

(i) profile plane

(ii) horizontal plane

(iii) vertical plane

(iv) None of the above

(f) If a point is in front of VP and on the HP

(i) front view will be above reference line

(ii) front view will be below reference line

(iii) top view will be below reference line

(iv) None of the above

(g) The FV and TV of a line shortened in length, if the line is

(i) parallel to HP and inclined to VP

(ii) parallel to VP and perpendicular to HP

(iii) parallel to both HP and VP

(iv) inclined to both the planes

(h) Continuous thin line is used to represent

(i) dimension line

(ii) visible edge

(iii) cutting plane

(iv) None of the above

(i) The eccentricity e for parabola is

(i) $e > 1$

(ii) $e = 1$

(iii) $e < 1$

(iv) $e = 2$

(j) FV of a triangular plane parallel to VP and perpendicular to HP is

(i) straight line

(ii) point

(iii) triangle

(iv) hexagon

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(Turn Over)

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(5)

2. A point A is situated in the first quadrant. Its shortest distance from the intersection point of HP, VP and auxiliary plane is 60 mm and it is equidistant from principal planes. Draw the projections of the point and determine its distance from the principal planes. 14

3. The projectors of the ends of a line PQ are 90 mm apart. P is 20 mm above the HP while Q is 45 mm behind the VP. The HT and the VT of the line coincide with each other on reference line xy, between the two end projectors and 35 mm away from the projector of the end P. Draw the projections of PQ and determine its true length and inclinations with two planes. 14

4. An equilateral triangle ABC having side length as 50 mm is suspended from a point O on the side AB, 15 mm from A in such a way that the plane of the triangle makes an angle of 60° with the VP. The point O is 20 mm below the HP and 40 mm behind the VP. Draw the projections of the triangle. 14

(6)

5. A regular pentagonal pyramid, base 30 mm side and height 80 mm rests on one edge of its base on the ground so that the highest point in the base is 30 mm above the ground. Draw its projection when the axis is parallel to the VP. 14

6. A cone of base 50 mm diameter and height 65 mm rests with its base on the HP. A section plane perpendicular to VP and inclined at 30° to the HP bisects the axis of the cone. Draw development of the lateral surface of the truncated cone. 14

7. A triangular pyramid, having base 40 mm side and axis 50 mm long, is lying on the HP on one of its faces, with the axis parallel to the VP. A section plane, parallel to the VP cuts the pyramid at a distance of 6 mm from the axis. Draw its sectional front view and the top view. 14

8. Consider the line segment with end points $P_1[1\,1\,0]$ and $P_2[6\,2\,0]$ lying in the xy-plane. Rotating the line about the x-axis yields a conical surface. Determine the point on this surface at $t = 0.5$, $\phi = \pi/3$. 14

(7)

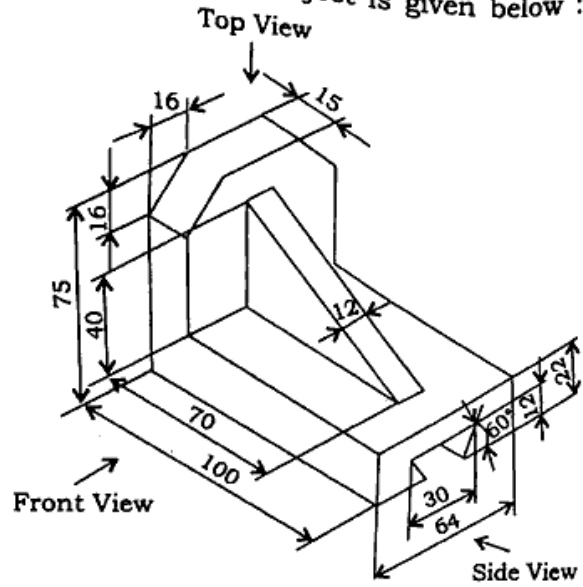**9.** Isometric view an object is given below :

Draw three views of this object by first angle projection method.   14

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