Roll No.: _____

National Institute of Technology, Delhi

Name of the Examination: B. Tech., May 2018

Branch: Electrical and Electronics Engineering (EEE) ..... Semester: II

Course Name: Engineering Visualization

Course Code: MEB 100

Time: 3 Hours ..... Maximum Marks: 50 Marks

Note: (1) Please write your answers in legible hand-writing.
(2) Assume any missing data and clearly mention it.

Section-A

Answer ALL the following questions. [1 mark each]

1A. Point A is 40mm above H.P. and 60mm in front of V.P. Draw its front and top view.
2A. Constrct a pentagon by using a method taught in the class.
3A. If the projection of a line, equally inclined to H.P and V.P. both, are verticle lines perpendicular to the reference line. Graphically, prove that sum of their angles with H.P. and V.P. is 90°.
4A. Draw the projection of a frustrum of a cone of base 40mm diameter, height 30mm and axis length of 60mm when it is resting with its base on H.P.
5A. Draw, by free hand, the missing TOP View (see Figure (1)).

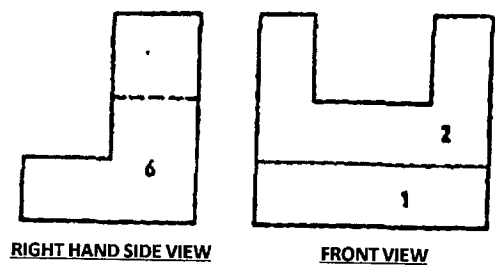

Figure 1: Problem figure for question number 5A.

6A. Draw, by free hand, the Isometric Projections (see Figure (2)).

7A. Match the pairs:

(Engineering Curves)	×	(Applications)
Cycloid curves		Man-hole of a steam Boiler
Rectangular hyperbola		Motor car head-lamp reflector
Ellipse		Gear tooth profile
Parabola		Boyle's law

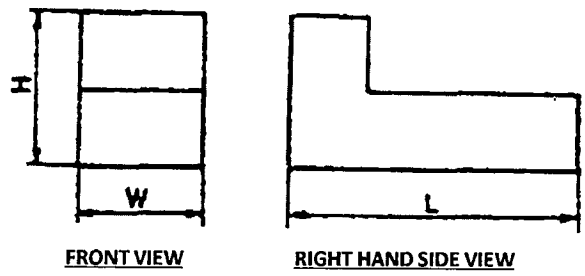

Figure 2: Problem figure for question number 6A.

8A. Fill in the blanks:
1. A line perpendicular to VP has no HT because the line is ——— to the HP.
2. A line perpendiculor to HP has no VT because the line is ——— to the VP.
9A. In the front view and top view two lines appear intersecting. How do we check if they are really intersecting or not? What are skew lines?
10A. Compare and contrast between the Orthographic projection and the Isometric projection.

Section-B

Answer ANY FOUR questions. [5 marks each]
1B. A stone is thrown from a building of 7m high and at its highest flight it just crosses a plam tree 14m high. Trace the path of the stone, if the distance between the building and the tree measured along the ground is 3.5m.
2B. A 3m long ladder is resting vertically on a wall. The end A is on the wall and the end B is on the floor. Draw the locus of point P, 0.5m from end A, if the ends A nd B slide along the wall and floor respectively untill the ladder becomes horizontal.
3B. A room measures 7m long, 5m wide and 4m high. An electric bulb hangs in the centre of the ceiling and 1 m below it. A thin straight wire connecting the bulb to a switch kept in one of the corners of the room and is 1.5m above the floor. Draw the projections of the wire. Find the true length and the slope angle of the wire with the floor.
4B. Construct a vernier scale to read metres, decimetres and centimetres and long enough to measure upto 4m. The RF of the scale is 1/20. Mark on it a distance of 2.28m.
5B. Draw and find the length of the common perpendicular to two non intersecting diagonals of the two adjecent faces of a cube. Take the length of the face diagonal as 100 mm. (Refer Figure(3))
6B. Draw an ellipse having major axis 80 mm and minor axis 50 mm using concentric circles method.

Section-C

Answer ANY TWO questions. [10 marks each]

1C. (1). Draw the projections of a cone, base 60mm diameter and axis 70mm long, when a point on its base circle is in the V.P. with the axis making an angle of 30° with V.P. with the axis making an angle of 30° with V.P. and the elevation of the axis making 45° with the XY line.
— (2). A thin regular hexagonal plate of 40mm sides with central circular hole of 35 mm diameter ahs one of its edges on the H.P. making an angle of 45° with V.P. The plate makes

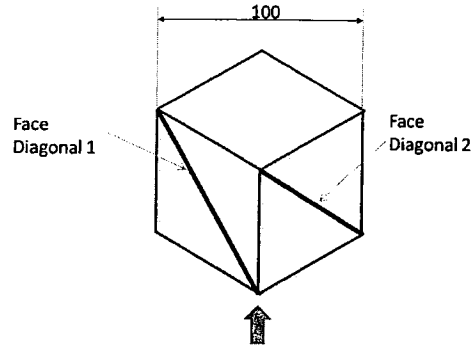

Figure 3: Problem figure for question number 5B.

an angle of 60° with H.P. Draw the projections of the plate assuming the plate in the first quadrant.

2C. Draw the isometric view (see Figure (4)). You must use an isometric scale.

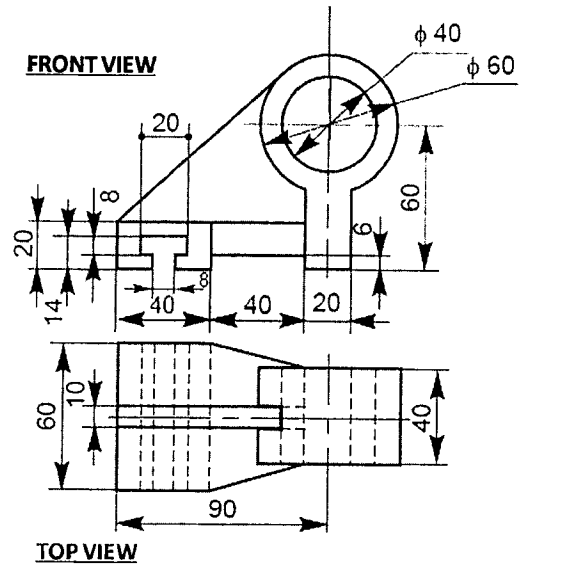

Figure 4: Problem figure for question number 2C.

3C. Draw the orthographic projections using First-Angle Method (refer Figure (5)):

4C. Specify the error at 1 to 14 (refer Figure (6)):

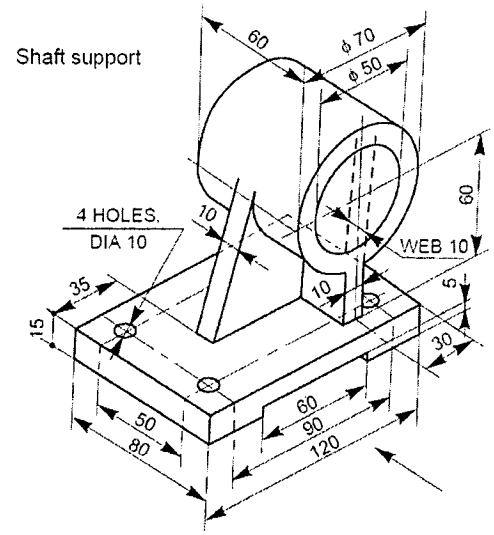

Figure 5: Problem figure for question number 3C.

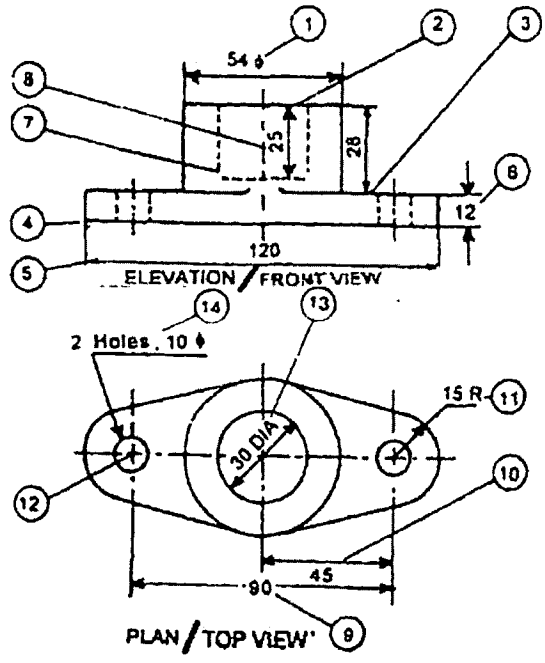

Figure 6: Problem figure for question number 4C.