

SEM 1 – 5 (RC 07-08)

F.E. (Semester – I) (Revised in 2007-08) Examination, Nov./Dec. 2014  
ENGINEERING GRAPHICS

Duration : 4 Hours

Total Marks : 100

**Instructions :** 1) Answer 5 questions, selecting atleast one from each Module.  
2) Assume additional data if required.  
3) Each sub-question carries 10 marks and each question 20 marks.

MODULE – 1

1. a) A circular disc stands on point P on its periphery on an inclined plane making an angle of  $30^\circ$  with the horizontal. Length of the diameter PQ is 40 mm. Draw the loci of points P and Q when the disc rolls up the plane without slipping for half rotation.  
b) The end A of a straight line AB, 150 mm long, is 50 mm behind V.P. and 35 mm below H.P. The line is inclined at an angle of  $30^\circ$  with the H.P. and has a point on it in both the reference planes. Draw the projections of the line and find its inclination with VP.
2. a) A stick of length equal to the circumference of a semicircle (radius 42 mm) is initially tangent to the semicircle on the right side of it. The stick now rolls over the circumference of the semicircle without sliding till it becomes tangent on the left side of the semicircle. Draw the loci of the two end points of the stick.  
b) Two lemons on a tree, planted near the compound wall of a bungalow, are 1.0 m and 1.25 m above the ground and 0.5 m and 0.75 m from a 15 cm thick compound wall but on the opposite sides of it. The distance between the lemons measured along the ground and parallel to the wall is 1.0 m. Determine the real distance between centres of two lemons.

MODULE – 2

3. a) A regular hexagon of 40 mm side has a corner in the H.P. Its surface is inclined at  $45^\circ$  to the H.P. and the top view of the diagonal through the corner which is in the H.P. makes an angle of  $60^\circ$  with the V.P. Draw its projections.



- b) A pentagonal prism side of base 40 mm and axis 60 mm is resting on the ground on one of its longer edges with the surfaces containing the edge equally inclined to the H.P. The axis of the prism makes an angle of  $30^\circ$  with V.P. Draw the projections of the prism.
4. a) A pentagonal plate of side 50 mm has a central equilateral triangular hole of 40 mm side, with a side of plate and that of the triangle parallel to each other. The plate is kept on the H.P. on this side, the side being inclined at  $30^\circ$  to the V.P. If the surface of the plate is inclined to the H.P. at  $45^\circ$ , draw the projections of the plate with the hole in it.
- b) A cone base circle diameter 40 mm and axis 70 mm is resting on the ground on a point on its base circle with its axis making  $30^\circ$  with the H.P. and  $45^\circ$  with the V.P. Draw the projections of the cone.
5. A pentagonal pyramid, base 30 mm side and axis 60 mm long, is lying on one of its triangular faces on the H.P. with the axis parallel to V.P. It is cut by a section plane perpendicular to V.P. and inclined at  $30^\circ$  to H.P. The section plane bisects the axis of the pyramid. Draw the front view, sectional top view, true shape of the section and the development of the lateral surface of the pyramid.
6. a) A cube side 50 mm is resting on its base with all the vertical faces equally inclined to V.P. It is cut by an A.I.P. in such a way that the true shape of the section is a regular hexagon. Draw the front view, sectional top view and true shape of the section.
- b) A frustum of a square pyramid has its base 50 mm side, top 20 mm side and height 75 mm. Draw the development of the lateral surface. Also draw the projections of the frustum (when its axis is vertical and a side of its base is parallel to V.P.), showing the line joining the midpoint of the top edge of one face with the midpoint of the bottom edge of the opposite face, by the shortest distance.

## MODULE – 4

7. a) Draw an isometric view of an object shown in Fig. 1.

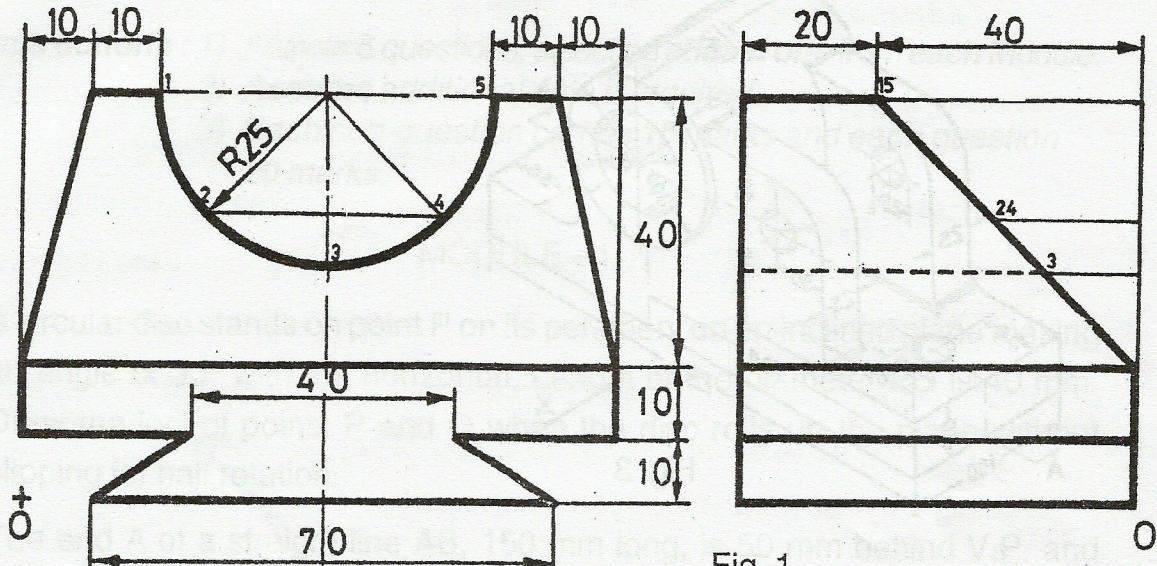


Fig. 1

- b) Draw sectional front view and right hand side view of the object shown in Fig. 2.

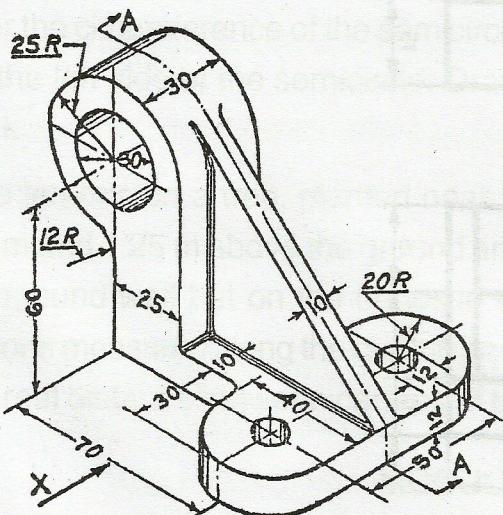


Fig. 2



8. a) Draw sectional front view and left hand side view of the object shown in Fig. 3.

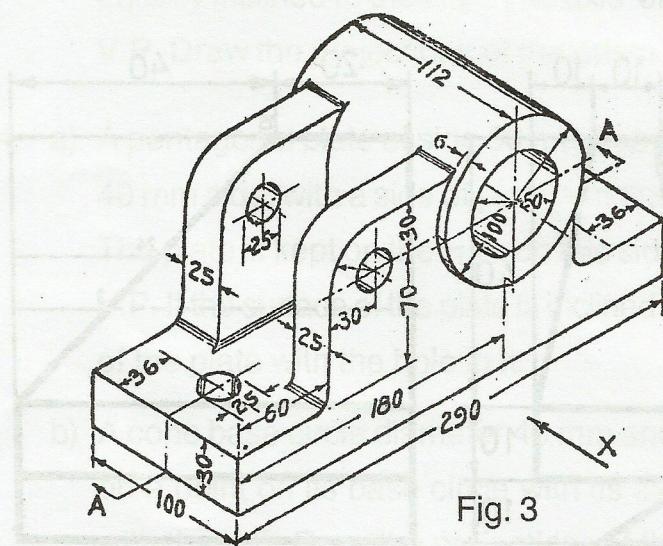


Fig. 3

- b) Draw an isometric view of an object shown in Fig. 4.

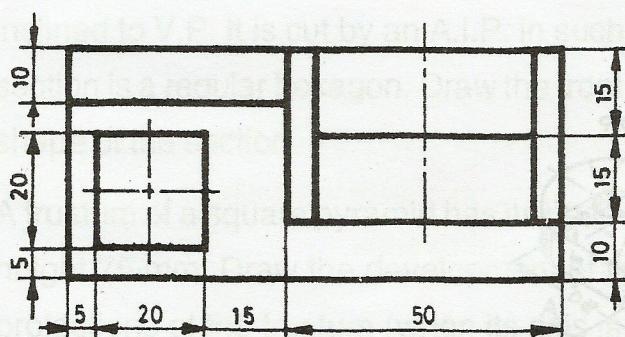
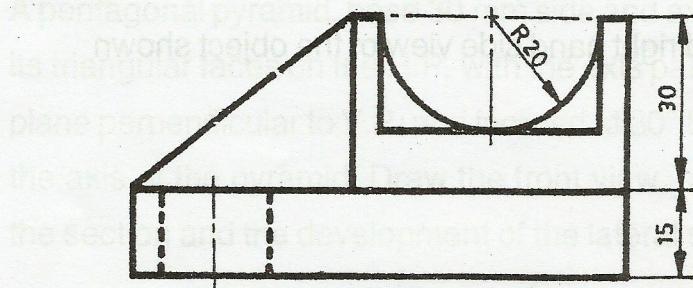


Fig. 4