

F.E. (Semester – I) (RC 2007 – 08) Examination, May/June 2018 ENGINEERING GRAPHICS

Duration: 4 Hours Max. Marks: 100

Instructions: 1) Attempt in all five questions.

- 2) At least one question must be attempted from each Module.
- 3) Assume missing dimensions/data if any.
- 4) All dimensions in mm unless otherwise specified.

MODULE - I

- 1. a) A tank shoots a projectile at an angle of 70° (to the ground) from top of a 30 m high hill. The projectile reaches a max height of 75 m (from ground) and then falls. Draw the path traced by the projectile till it falls on the ground. Name the curve and find the range of the projectile.
 - b) The top view of 75 mm long line AB measures 65 mm while its front view is 50 mm. Its one end A lies in HP and 12 mm in front of VP. Draw the projections of the line.
- 2. a) Draw the involute of a regular pentagon of side 20 mm.
 - b) A room $5.5 \text{ m} \times 6.5 \text{ m} \times 3.5 \text{ m}$ high has a bulb hanging from the centre of its ceiling. The rod for suspension of bulb is 1 m long. The switch for the bulb is located on the longer wall at 1.5 m from the floor and 2 m from the shorter wall. Find the shortest distance between the bulb and the switch.

MODULE - II

- 3. a) A circular lamina of 60 mm diameter rests on HP such that the surface of the lamina is inclined at 40° to HP. The diameter through the point on which the lamina rests on HP is inclined at 30° to VP. Draw its projections.
 - b) Draw the projections of pentagonal prism, side of base 40 mm and axis 70 mm standing on one of the corners of the base on the ground, with its axis making an angle of 30° with HP and 45° with VP.

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- 4. a) Draw the projections of a regular pentagon of side 30 mm, resting on one of its corner in the VP. Its side opposite to this corner makes an angle of 50° to HP and the surface makes an angle of 40° with VP.

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b) Draw the projections of cone, base circle diameter 40 mm and axis 70 mm standing on a point on the circumference of the base on the ground with its axis inclined at 30° to HP and 45° to VP.

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MODULE - III

5. a) A pentagonal pyramid, side of base 40 mm and height 75 mm, is resting on HP on one of its edges of base with axis parallel to VP and inclined to HP by 60°. It is cut by a horizontal section plane passing through the highest corner of the base. Draw the elevation and sectional view of the pyramid.

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b) Draw the projections of a cone resting on the ground on its base and show on it, the shortest path by which a point P, starting from a point on the circumference of the base and moving around the cone will return to the same point. Base of the cone is 65 mm diameter and axis is 75 mm long.

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6. A hexagonal pyramid, 20 mm side of base and 50 mm high, resting with its base on HP such that an edge of the base is parallel to VP. The pyramid is cut by two section planes, both perpendicular to VP. One of the section plane is parallel to HP and bisects the axis. The other section plane is inclined at 30° to HP, bisects the axis and leans towards the base of the pyramid. Both section plane lie on either side of the axis. Draw the front view, sectional top view, true shape of the section and develop the lateral surface of the pyramid.

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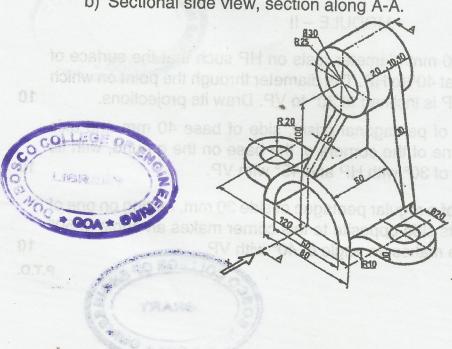
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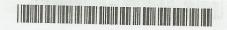
7. a) Draw the following views using first angle method of projection.

a) Front view.

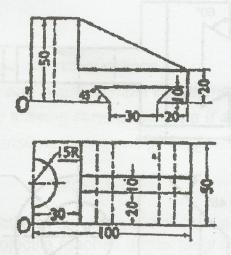
b) Sectional side view, section along A-A.

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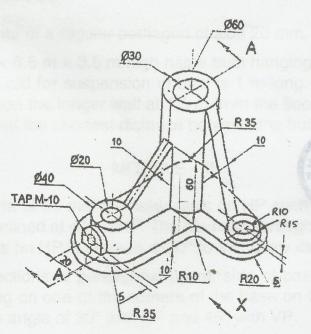


b) Two orthographic views are given in the figure below. Draw an isometric view, taking O as origin.



- 8. a) From the pictorial view shown below, draw the following views :
 - i) Front view in the direction of X
 - ii) Left hand side view

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b) Two orthographic views are given in the figure below. Draw an isometric view, taking O as origin.

0 35 15 R35 45° γ640

