F.E. (Semester – II) (RC 2016 – 17) Examination, May/June 2018
ENGINEERING GRAPHICS

Duration : 4 Hours   Max. Marks : 100

Instructions : 1) Answer **five** questions. At least **two** from Part – **A**, **two** from Part – **B**
and **one** from Part – **C**.
2) Missing data, if any may be suitably assumed.
3) Figures to **right** indicate **full** marks.

PART – A

Answer **any two** questions.

1. A) Two points A and B are 100 mm apart, point C is 75 mm from A and 60 mm
from B. Draw an ellipse passing through A, B and C.   **10**

   B) The projections of line AB which is in the first quadrant are perpendicular to xy
line. The end A is 20 mm from both the reference planes HP and VP. End B is
40 mm from HP and 55 mm from VP. Determine its true length, inclinations with
HP and VP.   **10**

2. A) A thin regular hexagonal plate of side 25 mm is resting on its corner in HP such
that the surface of the plate makes an angle of 50° to HP and the diagonal
passing through this corner makes an angle of 30° to VP. Draw the projections
of the plate.   **10**

   B) A horizontal wooden platform is 3.5 m long and 2 m wide. It is suspended from
a hook by means of chains attached at its four corners. The hook is situated
vertically above the centre of the platform and at a distance of 5 m above it.
Determine graphically the length of each chain and the angle which it makes
with the platform. Assume the thickness of the platform and the chain to be
equal to that of a line.   **10**

3. A) Draw the projections of a circle of 70 mm diameter having the end A on a
diameter AB in the VP and the end B in the HP and the plane of the circle is
inclined at 30° to the HP and 60° to the VP.   **10**

   B) A square pyramid, base 40 mm side and axis 60 mm long, is freely suspended
from one of the corners of its base. Draw its projections, when the axis as a
vertical plane makes an angle of 45 degrees with the VP.   **10**
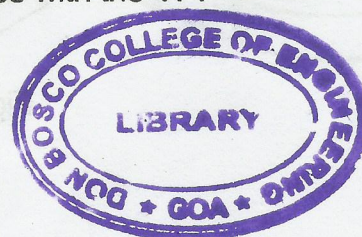
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PART – B

Answer **any two** questions.

4. A) A right regular tetrahedron of 50 mm side is resting on one of its triangular faces on HP and having a side of that face perpendicular to the VP. It is cut by an auxiliary inclined plane so that the true shape, of the section is a square of 24 mm side. Set the required cutting plane, draw the front view, sectional top view and draw the true shape of the section. Also find the inclination of the cutting plane with the HP.   **10**

   B) A cylinder, base circle diameter 50 mm and axis 70 mm is standing on its base on ground. A hole of diameter 30 mm is drilled in the cylinder in such a way that the axis of the hole is perpendicular to VP and intersects the axis of the cylinder at 30 mm from the base. Draw the development of the lateral surface of the cylinder with the hole.   **10**

5. A right regular hexagonal pyramid is having base 25 mm side and axis 70 mm long. It is resting on its base on the HP with two of its edges perpendicular to the VP. It is cut by a section plane, perpendicular to the VP and inclined at 30 deg to the HP bisecting the axis above the base. Draw the FV, sectional TV, and sectional side view, true shape of the section and development of the lateral portion of remaining part of the pyramid.   **20**

6. A) Figure Fig. 6A shows pictorial view. Draw the following views using first angle projection method.   **10**

   i) Front view looking in direction of arrow

   ii) Top view

   iii) Right hand side view.

Fig. 6A

B) Two orthographic views are given in Fig. 6B below. Draw an isometric view.   **10**

Fig. 6B

PART – C

Answer **any one** question.

7. A) A stick of length equal to the circumference of a semicircle, of radius equal to 40 mm, is initially tangential to the semicircle on the right side of it. The stick now rolls over the circumference of the semicircle without slipping. Trace the paths of the both ends of the stick. Name the curve.   **10**

B) Fig. 7B shows the pictorial view. Draw the following views using first angle projection method.   **10**

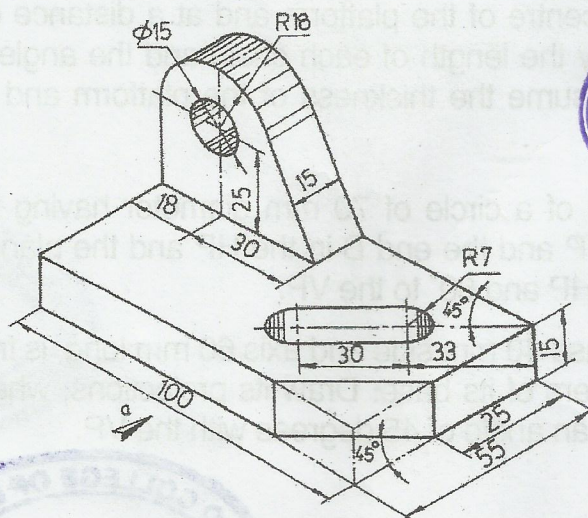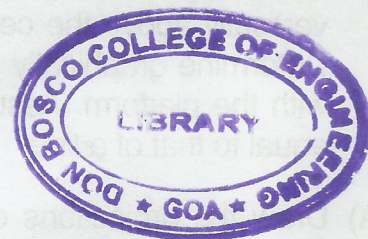   i) Sectional Front view taking section along A-B.

   ii) Top view.

Fig. 7B

8. A) A right regular hexagonal prism, edge of base 25 mm and axis 65 mm long, rests on one of its base corners on HP with its axis inclined at 45 degrees to HP and the top view of the axis inclined at 40 degrees to VP. Draw the projections of the given solid. **10**

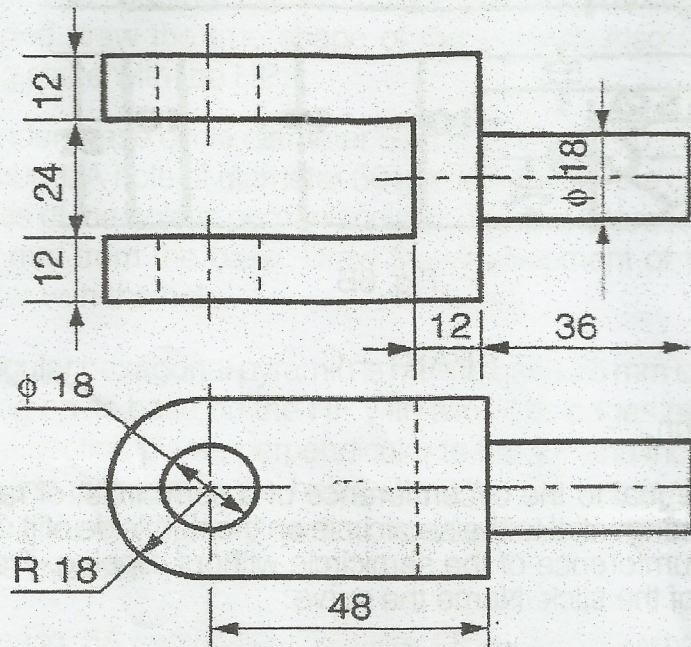B) Fig. 8B shows two orthographic views. Draw an isometric view. **10**

Fig. 8B