FACULTY OF ENGINEERING & INFORMATICS
B.E. (I-Year) (Common) Supplementary Examination, January 2011
ENGINEERING GRAPHICS

Time : Three Hours]

[Maximum Marks : 100

Note :— Answer **ALL** questions from Part A. Answer any **FIVE** questions from Part B.

PART—A (Marks : 35)

1. Write free hand inclined capital alphabets, B and W in single stroke of 5-mm height, take aspect ratio 7 : 4, angle 65° to 75°.   2

2. Construct a plain scale of 1 cm = 0·5 km to read kilometers and hectameters and long enough to measure upto 8 kilometers. Find its RF and measure a distance of 6 km and 4 hectameters on this scale.   4

3. Construct an ellipse having an eccentricity of 3/4 and focus 25 mm from the directrix. Measure its major and minor axes and the distance between the foci ?   4

4. Point X is 10 mm above HP and 20 mm in front of V and point Y is in the HP and 40 mm behind the VP. The distance between their projectors is 50 mm. Draw the projections of the points.   4

5. Point P of a line is 20 mm behind VP and 22 mm above HP. Its end Q 28 mm above HP and 25 mm in front of VP. The distance between its end projectors is 28 mm. Draw its projections and find its true length.   4

6. A regular pentagon PQRST, of 25 mm side, has its side QR in HP. Its plane is perpendicular to the HP and inclined at 40° to the VP. Draw the projections of the pentagon and show its traces when its corner nearest to the VP is 12 mm from it.   4

7. A triangular prism, side of base 30 mm and axis 50 mm long, lies on one of its rectangular faces in HP with its axis parallel to the VP. Draw its projections.   4

8. A right regular pentagonal pyramid, side of base 25 mm and height 50 mm, rests on its base in HP with one of its base edges perpendicular to VP. A section plane parallel to the HP cuts the axis of the pyramid at a distance of 24 mm from its base. Draw its sectional top view ?   4

9. Explain the "cutting plane method" of solving intersection of surface problems ? 3

10. What do you mean by cycloid, epicycloid and hypocycloid ? 2

PART—B (Marks : 65)

11. (a) A room of 2000 m³ volume is shown by a cube of 250 cm³ volume. Find RF and construct a scale to measure upto 40 m. Mark a distance of 22 m on the scale ? 6

    (b) Construct a hypocycloid for a rolling circle 50 mm diameter and directing circle 180 mm diameter. 7

12. A line PQ has its end P 13 mm above HP and 11 mm in front of the VP. The end Q is 52 mm above the HP and the line is inclined at 30° to the HP. The distance between the end projectors of the line is 51 mm. Draw its projections and find its inclination with VP and locate its traces ?

13

13. A square lamina PQRS of 30 mm side, rests on its corner R in HP. Its plane is inclined at 40° to the XY line such that its diagonal SQ is parallel to the HP and inclined at 30° to the VP. Draw its projections when its corner S is towards the VP and 16 mm in front of it. 13

14. A right regular tetrahedron, edge of base 30 mm, is held on ground plane on one of its base corner points such that the slant edge containing the base corner is inclined at 60° to HP and the base edge opposite the corner point inclined at 45° to the VP. Draw its projections. 13

15. A hexagonal pyramid, side of base 25 mm axis 50 mm long is resting on its base on HP, with an edge of the base parallel to VP. A section plane perpendicular to both HP and VP cuts the solid, 5 mm away from the axis. Draw the sectional side view of the cut solid ? 13

16. A right regular pentagonal pyramid, edge of base 30 mm and height 70 mm, resting on its base on ground plane such that left side base edge is perpendicular to the VP. It is cut by two cutting planes perpendicular to VP as (i) parallel to the base at 30 mm from its top and (ii) at its base, 20° inclined to HP and the cut plane passing through its axis line. 13

17. A right circular cylinder of diameter 60 mm and height 85 mm, resting on its base in HP. It is completely penetrated by another cylinder of diameter 45 mm and 85 mm long, such that their axis bisect each other at right angles and are parallel to VP. Draw their projections showing curves of intersection. 13