FACULTY OF ENGINEERING

B.E. I –Year (Suppl.) Examination, December 2016

Subject: Engineering Graphics

Time: 3 Hours   **Max.Marks: 100**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (35 Marks)

1 Divide a 115 mm long straight line into 8 equal parts.   3

2 A room of 1728 m 3 volume is shown by a cube of 4 cm side. Find the R.F. and length of scale to measure up to 50 m.   3

3 Write two practical applications of the following: 3
   a) Epicycloid
   b) Hypocycloid
   c) Involute

4 Draw the projections of the following points on a common reference line keeping the distance their projectors 30 mm apart.   4
   a) Point P is 35 mm below the HP and on the VP
   b) Point Q is 40 mm in front of the VP and 25 mm below the HP
   c) Point R is 45 mm above the HP and 20 mm behind the VP
   d) Point S is 30 mm below the HP and 45 mm behind the VP

5 A 60 mm long line AB is parallel to and 20 mm in front of the VP. The ends A and B are 10 mm above the HP respectively. Draw the projections of the line and determine its inclination with the HP. Also, locate the traces.   4

6 A square plate with 40 mm sides has one of its sides inclined at 30° to the HP. The surface of the plate is perpendicular to both HP and VP. Draw its projections and locate its traces.   4

7 Define an auxiliary inclined plane, auxiliary vertical plane and a profile plane.   3

8 Define isometric axis and isometric planes with neat sketch.   3

9 Explain the methods for drawing the development of pyramid and cone and list the practical applications of development of surfaces.   4

10 What is the difference between the TV of a hexagonal prism and that of a hexagonal pyramid when the both solids rest on their bases on the HP with similar orientation?   4

PART – B (5x13 = 65 Marks)

11 a) The major and minor axes of an ellipse are 140 mm and 90 mm respectively. Find the foci and draw the ellipse using 'arcs of circle' method. Draw a tangent and a normal to the ellipse at a point 40 mm above the major axis.
   b) Construct a diagonal scale showing kilometer, hectometer and decameter in which a 2 cm long line represents 1 kilometer, and the scale is long enough to measure up to 7 kilometers. Find representative fraction and mark a distance of 4 kilometer 5 hectameter 3 decameter on it.   5

12 A 80 mm long line AB has its end B 15 mm above HP and 20 mm in front of the VP. The line is inclined at 30° to the VP and 60° to the HP. Draw its projections.

13 A pentagonal lamina of 30 mm side rests on the HP on one its corners with its surface inclined at 30° to the HP. Draw its projections when the side opposite to the corner in the HP is parallel to the VP.

14 A tetrahedron of 75 mm long edges has one edge parallel to HP and inclined at 45° to the VP while a face containing that edge is vertical. Draw its projections.

15 A cylinder of 60 mm base diameter and 70 mm long axis is resting on its base in the HP. It is cut by two auxiliary inclined planes which make angles of 60° and 45° with the HP passing through the top end of the axis. Draw its sectional top view and true shape of the section.

16 A cone with a 60 mm base diameter and 75 mm long axis stands on its base on the HP. An auxiliary vertical plane having HT inclined at 45° to the VP cuts the cone, at a distance of 12 mm away from the axis. Draw the sectional front view and develop the lateral surface of the retained cone.

17 A sphere of radius 15 mm is placed on the top base of a square prism of side base 40 mm and height 50 mm the square prism is placed on the top of a cylinder of 30 mm height and 65 mm diameter. All the three solids have the common axis. Draw the isometric view of the combination of solids.

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