

**B.Tech. Degree I Semester Examination in Naval Architecture and
Ship Building, December 2008**

ST 01 E 3 ENGINEERING GRAPHICS
(New Scheme)

Time: 3 Hours

Maximum Marks: 100

I a) Draw the common tangents to two circles of radii 40 mm and 20 mm whose centre to centre distance is equal to 100 mm. (10)

b) Draw an ellipse by focus-directrix method when the distance of the focus from the directrix is equal to 60 mm and the eccentricity is $\frac{2}{3}$. (10)

OR

II a) An artillery gun fires a bomb shell from surfaces to target, 15 km. away. The bomb shell achieves a maximum height of 5 km. Draw the path traced by the shell, selecting a suitable scale. Name the curve. (10)

b) ~~An elastic string of 120mm length has its one end attached to the circumference of a circular disc with a 50mm diameter. Draw the curve traced out by the other end of the string when it is completely wound round the disc keeping the string always taut.~~ (10)

III a) ~~A straight road going uphill from a point A due east to another point B, is 6 Km. long and has a slope of 22° . Another straight road from B due 35° east of north, to a point C is 3.5 Km. long but is on a level ground. Determine the length and slope of the straight road joining the points A and C.~~ (10)

b) Draw a rhombus having diagonals 100 mm. and 60 mm, with the longer diagonal Horizontal. The figure is the top view of a square with 100 mm. long diagonals, with a corner on the ground. Draw its front view and determine the angle which its surface makes with the ground. (10)

OR

IV a) A straight line makes an angle of 30° with the HP and 60° with the VP. One end of the line is in the HP and 40 mm from the VP. The other end lies in the VP. Draw the projections of the line. Also find the true length of the line and the height of the end in the VP. (10)

b) A regular pentagonal lamina of 40mm side is resting on the HP on one of its sides which is inclined at 45° to the VP. The plane of the lamina is inclined to the HP at 30° . Draw the top view and front view. (10)

V A pyramid has rectangular base of size 70mm x 40mm and height 85 mm. Its longer edge of base is parallel to the VP. The axis of pyramid is inclined at 25° to the VP and 50° to the HP. Draw the projection of the solid assuming the apex nearer to the observer. What is the inclination of the longer edge of the base with the HP. (20)

OR

(Turn over)

- VI A cone with a base diameter of 75 mm and an axis length of 100mm is lying in space with its axis parallel to both the reference planes. An auxiliary vertical plane inclined at 30° to the VP and passing through a point on the axis, 32 mm from the base cuts the cone. Draw the top view, sectional front view and sectional side view. The part of the cone containing the apex is retained. (20)
- VII A pentagonal prism is resting on a corner on the HP with the longer edge through that corner inclined at 30° to the HP. The rectangular face opposite to that edge has its smaller side inclined at 45° to the VP. An auxiliary inclined plane inclined at 60° to the HP cuts the prism at the mid point of the axis. Draw the development of the prism. (20)
- OR
- VIII A vertical square prism, with a 60 mm base side is resting on its base on the ground, with its faces equally inclined to the VP. It is completely penetrated by a horizontal equilateral triangular prism with a 70 mm base side having a rectangular face parallel to the VP and 12mm away from the axis of the square prism. Draw the projections showing line of intersection. Assume suitable length of prisms. (20)
- IX A pentagonal pyramid, base edge 30mm and height 60mm is resting on its base with the base edge parallel to the VP. A cutting plane at 30° with HP and perpendicular to VP cuts the solid bisecting the axis. Draw the isometric view of the bottom portion. (20)
- OR
- X A circular lamina of 40mm diameter lies on its surface on ground and the nearest point on its circular rim is 7mm behind the picture plane. The station point lies on the central line, 60mm in front of the picture plane and 25 mm above the ground. Draw the perspective view. (20)