BT MRE–I&II(S)–04.21–0286 Reg. No. | | | | | | | | |

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B.Tech. Degree I&II Semester Supplementary Examination in Marine Engineering April 2021

MRE 1106 ENGINEERING GRAPHICS

(2013 Scheme)

Time: 3 Hours Maximum Marks: 100

(5 × 20 = 100)

I. (a) Construct a backward vernier scale to show readings of $1/10^{th}$ of a metre when 3 cm represents 10 m. Construct the scale to read upto 60 m and mark distances of 35.3 m and 47.3 m on your scale. (10)

(b) Construct a diagonal scale to read 50 m minimum if 2.5 cm is equivalent to 2.5 m. Show a distance of 6350 m on it. (10)

OR

II. (a) Draw a parabola of eccentricity equal to one if the distance from its focus and directrix is 30 mm. Draw a tangent and normal at a point on the parabola 50 mm away from the directrix. (10)

(b) Draw an epicycloid generated by a rolling circle of 40 mm diameter for one complete revolution. The radius of the directing circle is 75 mm. Draw tangent and normal at any point on the epicycloid. (10)

III. (a) A line PQ 120 mm long is inclined at 45° to VP and 35° to HP. The end P is in second quadrant and Q is in fourth quadrant. A point R on PQ, 50 mm from P, is in both the planes, Draw the projections of PQ. (10)

(b) A line AB, inclined at 30° to the VP has its ends 50 mm and 20 mm below the HP. Length of its front view is 65 mm and its VT is 10 mm below the HP. Determine the TL of AB, its indication with the HP and locate its HT. (10)

OR

IV. (a) A circular plate of 50 mm is held such that its plane is perpendicular to the HP and inclined at 30° to VP with its centre 30 mm above the HP and 20 mm in front of the VP. Draw its projections. (10)

(b) A rectangular laminar ABCD, of sides 60 mm × 32 mm, has its side AB in HP and inclined at 60° to VP and the plane of the lamina inclined at 60° to VP and the plane of the lamina inclined at 60° to the HP. Draw its prections. (10)

V. A pentagonal pyramid side of base 30 mm and axis 60 mm long is resting in HP on one of its base edges such that the axis is inclined at 45° to VP and parallel to HP. Draw its projections. (20)

OR

VI. A pentagonal pyramid side of base 30 mm and axis 60 mm long is resting on HP in its base such that a side of the base is parallel to VP. A section plane inclined at an angle of 35° to HP bisects the axis of the pyramid. Draw its sectional top view and sectional side view. (20)

(P.T.O.)

VII. A pentagonal pyramid side of base 30 mm and height 52 mm, stands with its base on HP and an edge of the base is parallel to V.P. It is cut by a plane perpendicular to V.P, inclined at 40° to HP and passing through a point on the axis, 32 mm above the base. Draw the development of the lateral surface of the truncated pyramid. (20)

OR

VIII. A pentagonal prism, side of base 40 mm and height length 80 mm is resting on its base on the HP with a vertical face perpendicular to the V.P. It is penetrated centrally by a square prism of face 20 mm and axes 80 mm. The axes of the two solids intersect at right angles at a point 45 mm above the HP. The lateral surfaces of the square prism are equally inclined to the HP and the VP. Draw the curves of intersection in the top and front view. (20)

IX. A cube of 30 mm edge is placed centrally on top of a cylindrical block of diameter 52 mm and 20 mm height. Draw the isometric view of the solids. (20)

OR

X. Draw the perspective view of a hexagonal prison with side of base 25 mm and height 75 mm, lying on the ground plane (GP) on one of its longer edges such that one of its rectangular faces is perpendicular to the GP. The axis is inclined at 30° to the PP and an edge of the base is touching the PP. The station point is 110 mm in front of the PP 95 mm above the GP and lies in a central plane which bisects the axis. (20)

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