

Bihar Engineering University, Patna
B.Tech 1st Semester Exam-2022

Course: B.Tech.

Time: 03 Hours

Code: 100102

Subject: Engineering Graphics & Design

Full Marks: 70

Instructions:-

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory

Q.1 Choose the correct answer of the following (any seven):

[2 x 7 = 14]

- (a) The size 210 mm × 297 mm of drawing sheet recommended by the bureau of Indian Standard is for:
(i) A1 (ii) A2 (iii) A3 ~~(iv) A4~~
- (b) The actual length of the drawing is 200m; the RF is given as 1:2500. Find length of the drawing.
(i) 20mm ~~(ii) 80mm~~ (iii) 0.08mm (iv) 160mm
- (c) In a scale, a line of length 2 cm is drawn on the drawing sheet to represent an actual length of 1 m. The representative fraction (RF) value is
~~(i) 1 : 50~~ (ii) 1 : 2 (iii) 1 : 10 (iv) 100 : 1
- (d) In first angle projection method
~~(i) Object is placed in between observer and projection plane~~
(ii) Projection plane is assumed to be transparent
(iii) Observer is in between the object and the plane of projection
(iv) None of the above
- (e) When are the projectors parallel to each other and perpendicular to the plane of projection?
(i) Oblique projection (ii) Isometric projection
~~(iii) Orthographic projection~~ (iv) Perspective projection
- (f) If a line AB is inclined at 45° to the HP and parallel to the VP, its true length is shown in
(i) F.V. (ii) T.V. (iii) F.V. & T.V. (iv) in-sufficient data
- (g) The FV and TV of a line represent true lengths, if the line is
(i) Parallel to HP and perpendicular to VP
(ii) Parallel to VP and perpendicular to HP
(iii) Parallel to both HP and VP
(iv) Parallel to VP and inclined to HP
- (h) TV view of a square plane parallel to HP and perpendicular to VP is a
(i) Straight line (ii) Point (iii) Rectangle (iv) Square
- (i) Which of the following is DRAW command?
(i) Line (ii) P line (iii) Polygon ~~(iv) All of the above~~
- (j) If the distance from the focus is 8 mm and the distance from the directrix is 2 mm then what is the name of the conic section?
(i) Circle (ii) Parabola ~~(iii) Hyperbola~~ (iv) Ellipse

- Q.2 (a)** A point 'A' is situated in the first quadrant. Its shortest distance from the intersection point of HP, VP and auxiliary plane is 60 mm and it is equidistant from principal planes. Draw the projections of the point and determine its distance from the principal planes. [7]

(b) Draw an ellipse by using 'arc of circle' method, given its major and minor axes as 100mm and 70mm respectively. Also draw a tangent and a normal to the ellipse. [7]

Q.3 The front view of straight-line AB is 60mm long and is inclined at 60° to the reference line XY. The end point A is 15mm above H.P. and 20mm in front of V.P. Draw the projections of a line AB if it is inclined at 45° to the V.P. and is situated in the first quadrant. Determine its true length, and inclination with the H.P. [14]

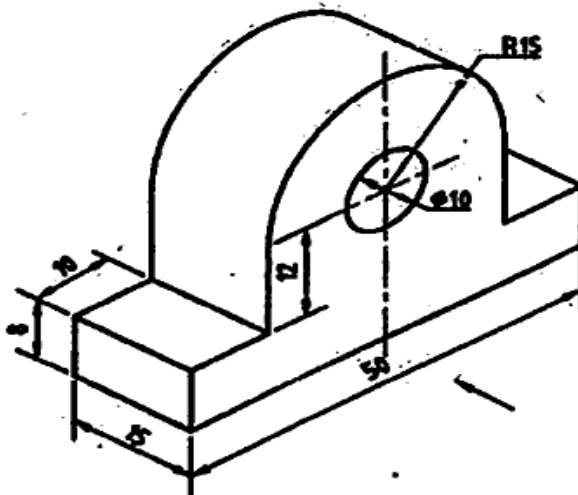
Q.4 Draw the projections of a regular hexagon of 25 mm side, having one of its sides in the HP and inclined at 60° to the VP, and its surface making an angle of 45° with the HP. [14]

Q.5 A circular plate of negligible thickness and 50mm diameter appears as an ellipse in the front view, having its major axis 50mm long and minor axis 30mm long. Draw its top view when the major axis of the ellipse is horizontal. [14]

Q.6 A cone, base 75mm diameter and axis 80mm long is resting on its base on the H.P. It is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35mm from the apex. Draw its front view, sectional top view and true shape of the section. [14]

Q.7 A cylinder of diameter 60mm and height 60mm is resting vertically on one of its ends on the H.P. It is cut by a plane perpendicular to the V.P. and inclined at 30° to the H.P. The plane meets the axis at a point 30mm from the base. Draw the development of the lateral surface of the lower portion of the cylinder. [14]

Q.8 Isometric view an object is given below.



Draw three views of this object by first angle projection method.

Q.9 Draw the isometric drawing of the frustum of a right regular hexagonal pyramid, side of base hexagon 20mm, side of top hexagon is 10mm and height of the frustum is 40mm. [14]

