

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-I (NEW) EXAMINATION – WINTER 2023

Subject Code:3110013

Date:19-01-2024

Subject Name:Engineering Graphics & Design

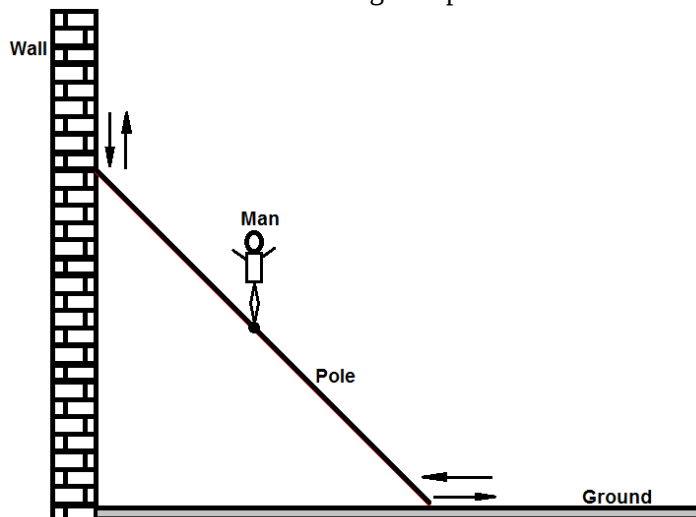
Time:02:30 PM TO 05:30 PM

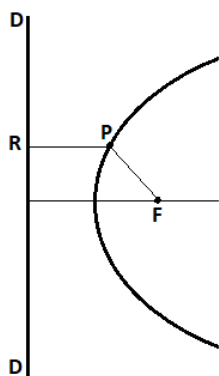
Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

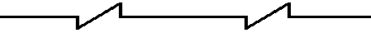
- | | Marks |
|---|-------|
| Q.1 (a) Define Representative Fraction. With reference to Representative Fraction, classify the scales. | 03 |
| (b) Construct a scale of 1:40 to read meters and decimeters and long enough to measure 6 m. Mark on it a distance of 4.7 m and 3.2 m. | 04 |
| (c) A pole is sliding vertical to horizontal position as shown in figure. A man is standing at the midpoint of pole. Trace locus of man for sliding of the pole from vertical to horizontal. Length of pole is 480 centimeters. | 07 |



- | | | | |
|---------|---|---|----|
| Q.2 (a) |  | In the figure shown here, show the conditions for having Ellipse, Parabola and Hyperbola for the following equation | 03 |
|---------|---|---|----|

$$\frac{PF}{PR}$$

- | | |
|---|----|
| (b) Identify the following types of line and write their use in engineering drawing | 04 |
| 1) - - - - - | |

- 2) 
- 3) 
- 4) 

- (c) A thin circular disc of 50 mm diameter is allowed to roll without slipping from upper edge of sloping board which is inclined at 15° with the horizontal plane. Draw the curve traced by the point on the circumference of the disc. Consider the point is at contact surface of disc and sloping board initially. 07

OR

- (c) Major axis of an ellipse is 120 mm and the distance between focii of ellipse is 80 mm. Draw an ellipse using oblong method. Draw tangent and normal to any point to the curve. 07

- Q.3 (a)** Differentiate between prism and pyramid 03

- (b) A square ABCD of 50 mm side is resting on HP on one of its side such that it appears as a rectangle of 35 mm X 50 mm. Draw its projection and find its inclination with HP. 04

- (c) A semicircular plate has the 60 mm diameter straight edge in HP and inclined at 45° to VP. The surface of plate makes an angle of 30° to HP. Draw its projection. 07

OR

- Q.3 (a)** Show by sketches the difference between
(i) aligned dimensioning and
(ii) unidirectional dimensioning 03

- (b) A line PQ 70 mm long is parallel to profile plane and inclined at 30° to HP. Point P is 10mm Above HP and point Q is in VP. Draw its projections. 04

- (c) A line AB, 80mm long is inclined to HP at 30° and to VP at 45° . The end A is in HP and VP. Draw projection of line AB. Find length of top view and front view of line and inclination of them with HP and VP. 07

- Q.4 (a)** Define Parabola, Ellipse and Hyperbola 03

- (b) Draw projection of following points:
1. Point A is in HP and in VP
2. Point B is in VP and 25 mm below HP
3. Point C is 10 mm below HP and 20 mm in front of VP
4. Point D is 20 mm above HP and 20 mm in front of VP 04

- (c) A pentagonal pyramid, side of base 25 mm and height 50 mm is resting on HP with one of the edge of base is perpendicular to VP. It is cut by auxiliary inclined plane inclined at 45° and cuts the axis at 20mm above the base. Draw sectional top view, front view and true shape of section. 07

OR

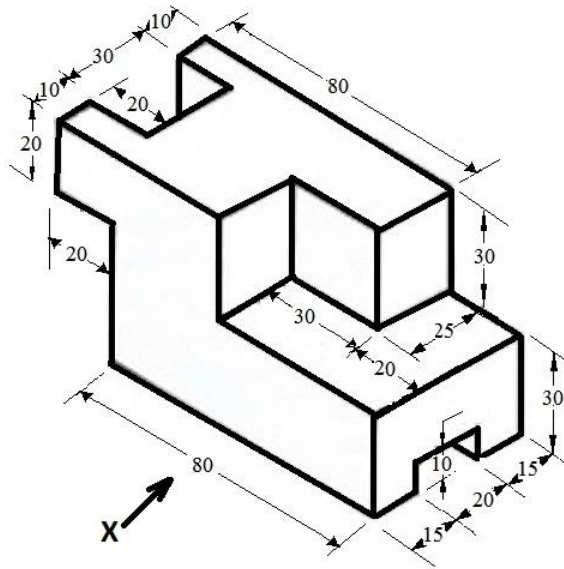
- Q.4 (a)** Benefits of AUTOCAD over conventional drawing techniques 03

- (b) Hexagonal pyramid of side of base 25 mm and height 55mm is resting on HP on its base. It is cut by a plane parallel to HP and perpendicular to VP and cutting the axis at 25 mm above the base. Draw its projection. 04

- (c) A $30^\circ - 60^\circ$ set square of 60 mm longest side is so kept such that the longest side is in HP making an angle of 30° with VP. The set square itself is inclined at 45° to HP. Draw the projections of the set square. 07

- Q.5 (a)** What are the advantages and disadvantages of using AUTOCAD? 04

- (b) For the figure shown below, draw plan, elevation and right hand side view using third angle projection method. 10



OR

Q.5 (a) Explain use of following AUTOCAD commands

04

1. TRIM
2. ARC
3. MIRROR
4. GRID

(b) Draw isometric view of the following figure

10

