Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER 1&2 EXAMINATION – SUMMER 2020

Subject Code: 3110013   **Date:05/11/2020**

Subject Name: Engineering Graphics and Design

Time: 10:30 AM TO 01:30 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Define Representative Fraction (RF). Find RF if 5 cm in the drawing is equal to 10 km. **03**

(b) Give the definitions of the following curves: (i) Ellipse (ii) Involute **04**

(c) Draw epicycloid of a 40 mm diameter circle, which rolls outside on another circle of 150 mm diameter for one revolution clockwise. Draw a tangent and normal to it at a point 95 mm from the center of the directing circle. **07**

Q.2 **(a)** Draw the projections of the following points on the same X-Y line. **03**
(a) Point 'A' is 20 mm below H.P and 20 mm in front of VP.
(b) Point 'B' is 30 mm above H.P and 40 mm in front of VP.
(c) Point 'C' is on VP and 30 mm above HP.

(b) The top view of a 75 mm long line AB measures 65 mm, while its front view measures 50 mm. It's one end 'A' is in HP and12 mm in front of VP. Draw the projections of AB and determine its inclination with HP and VP. **04**

(c) A line AB 100 mm long is inclined to HP at 45° and inclined to VP at 30°. Draw front and top views of line and determine their lengths. Also determine the perpendicular distance of end B from both HP and VP. **07**

OR

(c) A line PQ 85 mm long has its end 'P' 10 mm above HP and 15 mm in front of VP. The top view and front view of line PQ are 75 mm and 80 mm respectively. Draw its projections. Also determine the true and apparent inclinations of the line. **07**

Q.3 **(a)** A square lamina of 40 mm side rests on one of its sides on HP. The lamina makes 30° with HP and the side on which it rests makes 45° with VP. Draw its projections. **03**

(b) Draw the development of the lateral surfaces of a square pyramid, side of base 25 mm and height 50 mm, resting with its base on HP and an edge of the base is parallel to VP. **04**

(c) A hexagonal prism with side of base 30 mm and axis length 60 mm is resting on one of its base edge on HP such that its axis is inclined at 45° with HP and the side on which it is resting is inclined at 30° with VP. Draw the projections. **07**

OR

Q.3 **(a)** Give complete classification of solids. **03**

(b) A regular pentagon laminate of 30 mm each side is resting on HP on one of its sides with its surface making 45° with HP. Draw its projection when the side in HP makes an angle 30° with VP. **04**

(c) A square base pyramid with 40 mm side and axis 65 mm long, has its base on the HP and all the edges of the base are equally inclined to the VP. It is cut by a section plane perpendicular to the VP and inclined at 45º to the HP. Further, it is bisecting the axis of the pyramid. Draw its sectional top view, sectional side view and true shape of the section.   **07**

Q.4 **(a)** Write any three main differences between first angle and third angle projection system.   **03**

(b) In a slider crank mechanism **(Figure-1)**, the connecting rod is 160 mm and crank is 40 mm in length. The other end point of connecting rod on the slider moves along a straight line passing through the center of crank rotation. Trace the locus of midpoint 'P' of the connecting rod.   **04**

(c) Draw front view, top view and right-hand side view of the object given in **Figure-2** using first angle projection.   **07**

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OR
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Q.4 **(a)** Explain following commands: (i) Line (ii) Poly Line (iii) Circle   **03**

(b) List and explain different methods to draw a polygon in AUTOCAD.   **04**

(c) **Figure-3** shows the pictorial view of an object, draw the following views using first angle method of projection. Also give the important dimensions.   **07**
(i) Sectional front view, along section A-A
(ii) Top View

Q.5 **(a)** What are the benefits of Computer Aided Drawing.   **03**

(b) Draw isometric circle on the three side of cube of 60 mm dimension.   **04**

(c) Draw isometric drawing of an object whose projections are given in **Figure–4**.   **07**

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OR
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Q.5 **(a)** Draw the figure to explain the aligned and unidirectional system of dimensioning.   **03**

(b) Draw an isometric scale of 100 mm length and show 30 and 60 mm length on the scale.   **04**

(c) Draw isometric drawing of an object whose projections are given in **Figure–5**.   **07**
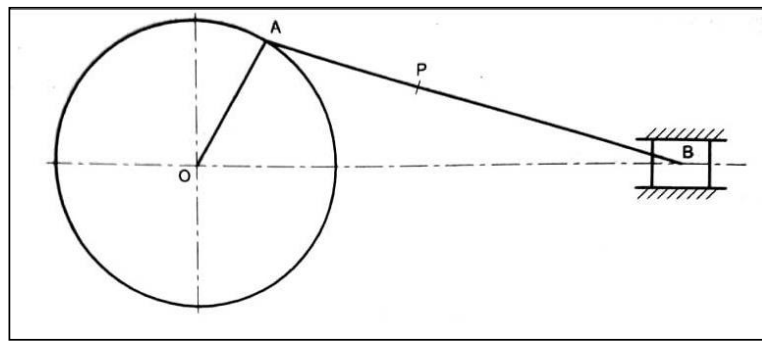
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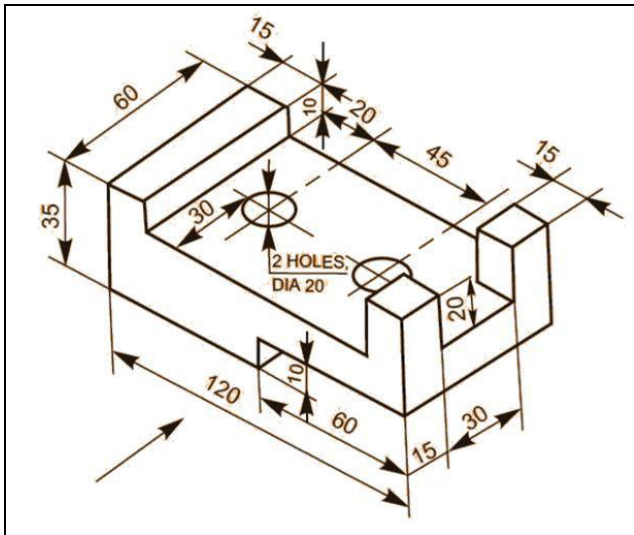
FIGURES
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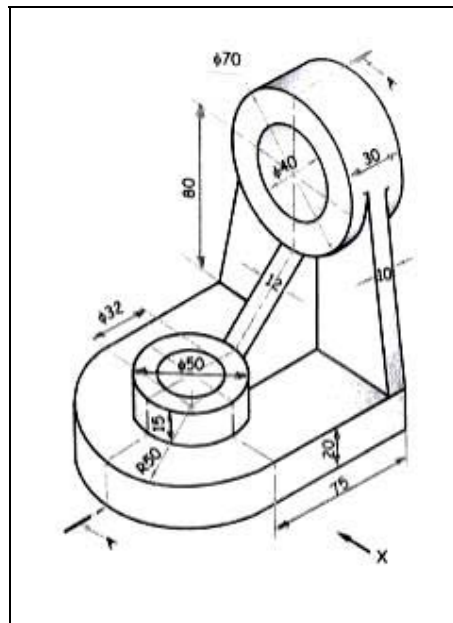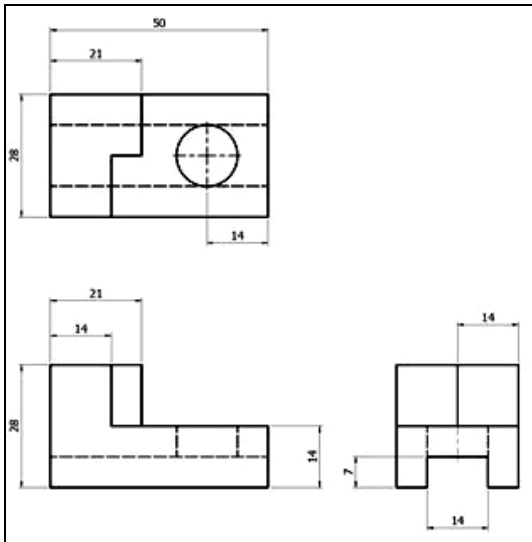
Figure-1[Q4 (b)]
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Figure-2 [Q4 (c)]

Figure-3 [(OR) Q4 (c)]

Figure-4 [Q.5 (c)]

Figure-5 [(OR)Q.5 (c)]

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