Engineering Drawing &
Elements of Mechanical Engineering
(102115)

P. Pages : 4

Time : Three Hours

Max. Marks : 80

Instructions to Candidates :
1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** sub question from unit I, IV and V.
5. Attempt **any one** sub question from unit II and III.
6. Assume suitable data wherever necessary and state the assumptions made.
7. Use of drawing instruments and non programmable calculator is permitted.
8. Figures to the right indicate full marks.
9. Solve Unit I, II and III on drawing sheet and solve unit IV and V on separate theory answer sheet.

UNIT - I

1. a) The end projectors through the ends of the line AB are 55 mm apart. End A is 30 mm above HP and 20 mm infront of VP. End B is 65 mm infront of VP and 30 mm above HP. Draw its three views. Determine its true length and inclination with VP.   8

   b) A rhombus having diagonals 70 mm and 40 mm respectively is resting on a corner in HP. The longer diagonal is parallel to VP and inclined to HP. Such that the top view appears as a square. Draw its three views and determine the angle made by the plate with HP.   8

   c) A pentagonal plate of 40 mm side and negligible thickness is resting on one of its corner in HP. The surface of plate is normal to VP and inclined at 45° to the HP. A central circular hole of diameter 30 mm is cut through it. Draw its projection.   8

UNIT - II

2. a) Fig.1 shows a pictorial view of an object, Draw -
    i)   Sectional F.V. along x-direction (cutting plane - AA)
    ii) Top view
    iii) Left hand side view along y - direction.
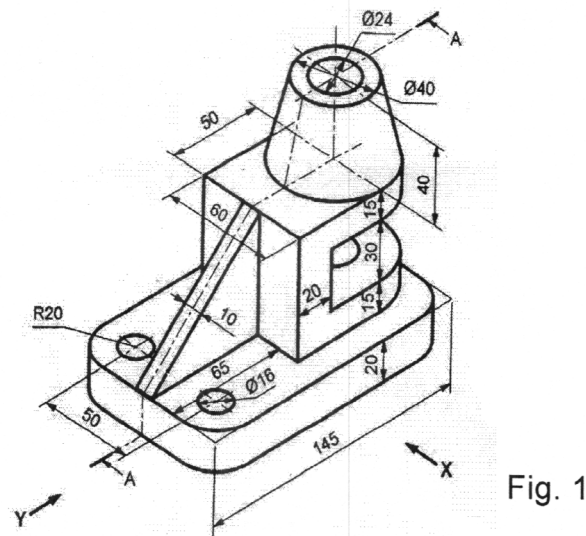   iv) Give all dimensions, use first angle method of projection.   **16**

Fig. 1

    b) Fig. 2 shows a pictorial view of an object. Draw -
    i)   Sectional F.V. along X-direction (cutting plane AA)
    ii) Top view
    iii) Left hand side view along y - direction.
    iv) Give all dimensions use third angle method of projection.   **16**

Fig. 2

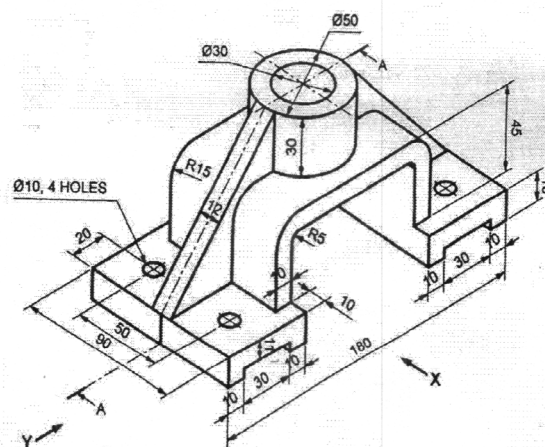## UNIT - III

3. a) Fig. 3 shows two orthographic views of an object. Draw Isometric view.
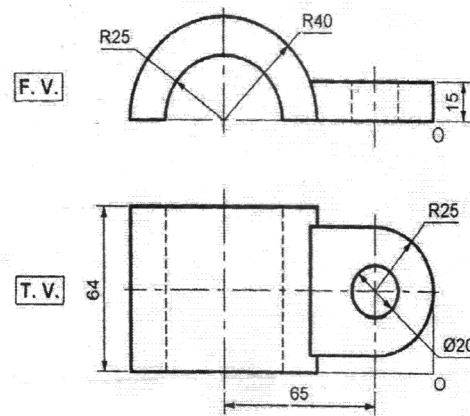   Take 'O' as origin.   **16**

Fig. 3

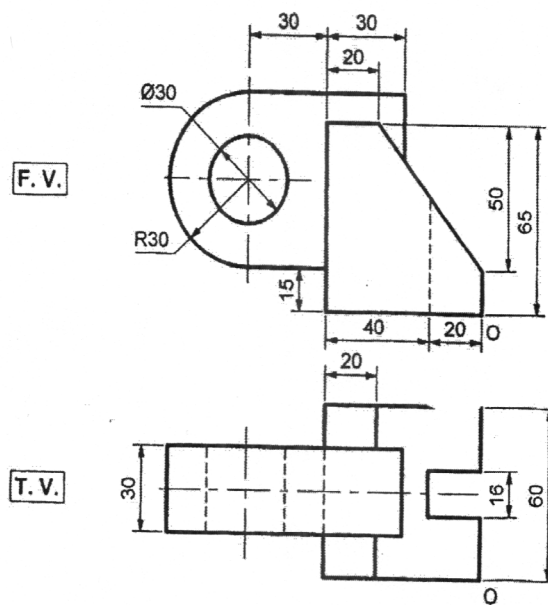b) Fig. 4 shows two orthographic views of an object. Draw Isometric view.
    Take 'O' as origin.   **16**

Fig. 4

UNIT - IV

4. a) i) Compare two stroke and four stroke engine cycle.   4

   ii) Define gas turbine plant. State its application and classification.   4

   b) Define energy. What are the sources of energy ? State the lows of conservation of mass and energy.   8

   c) What do you understand by 'energy audit' ? Discuss general energy audit reporting format.   8

UNIT - V

5. a) i) Differentiate between shaft and axle.   4

   ii) What is key ? State its function. Classify the different types of keys.   4

   b) With a neat sketch discuss the working of reciprocating pump.   8

   c) i) Define valve. How these are classified ? Explain their functions in brief.   4

   ii) What is bearing ? How bearings are classified ? State their functions.   4

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