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 1, 4 & 5.
5. Attempt **any one** sub question from unit 2 & 3.
6. Assume suitable data wherever necessary and state the assumptions mode.
7. Diagrams / sketches should be given wherever necessary.
8. Use of drawing instruments and non - programmable calculators is permitted.
9. Figures to the right indicate full marks.
10. Solve unit 1, 2 and 3 on drawing sheet and solve unit 4 & 5 on separate theory answer sheet.

UNIT - I

1. a) A line PQ of length 60mm has its midpoint 'N' 10mm above H.P. & 30mm infront of V.P. Line is parallel to H.P. and is inclined at 35° to the V.P. Draw three views of the line and find its elevation length. 8

   b) A pentagonal plate of side 50mm has a central equilateral triangular hole of 40mm sides, with the side of a plate and that of triangular hole parallel to each other. The plate is kept on the H.P. on this side. Determine the angle of a plate with the H.P., if the highest point of a plate is 40mm from the H.P. and draw its projections. 8

   c) ABCD is a symmetrical trapezium with AB = 50mm and CD = 80mm as its parallel sides and 60mm height. The plane has its side AB in VP & CD 35mm away from it. Obtain the projections of the plane and find its angle with V.P. 8

UNIT - II

2. a)   Fig. (2a) shows isometric view of component. Draw following views using third angle projection method.   **16**
    i)   Sectional front view looking in the direction (x), (section A - A)
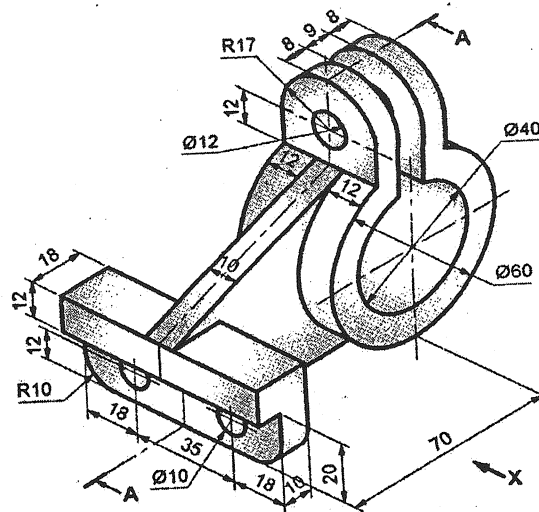   ii)   Top view
    iii) Left hand side view.

Fig. 2 (a)

    b)   Fig. (2b) shows isometric view of an object. Draw their following views using first angle projection method :   **16**
    i)   Front view looking in the direction 'X' (Section A - A)
    ii)   Top view
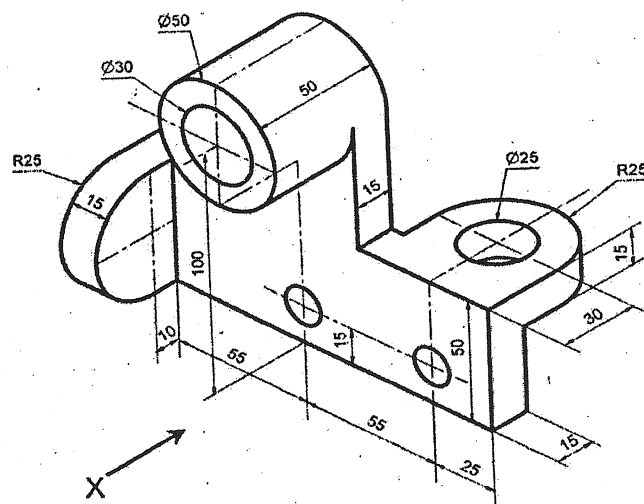   iii) Right hand side view.

Fig. 2 (b)

UNIT - III

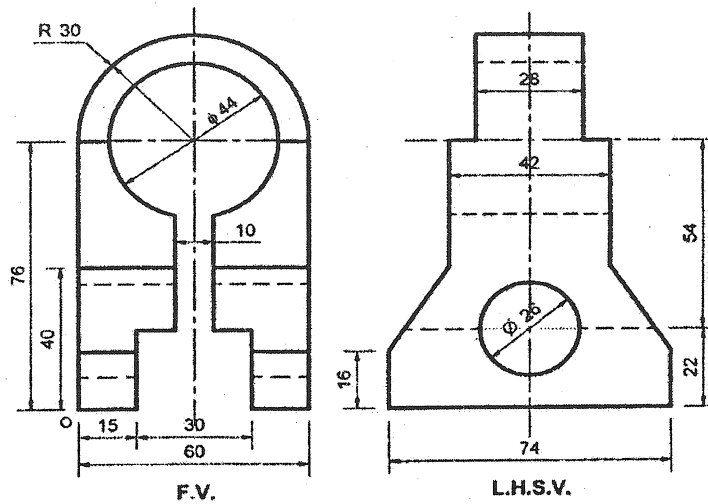3. a) Fig. (3a) shows front view and side view of an object. Draw isometric view.   **16**

Fig. 3 (a)

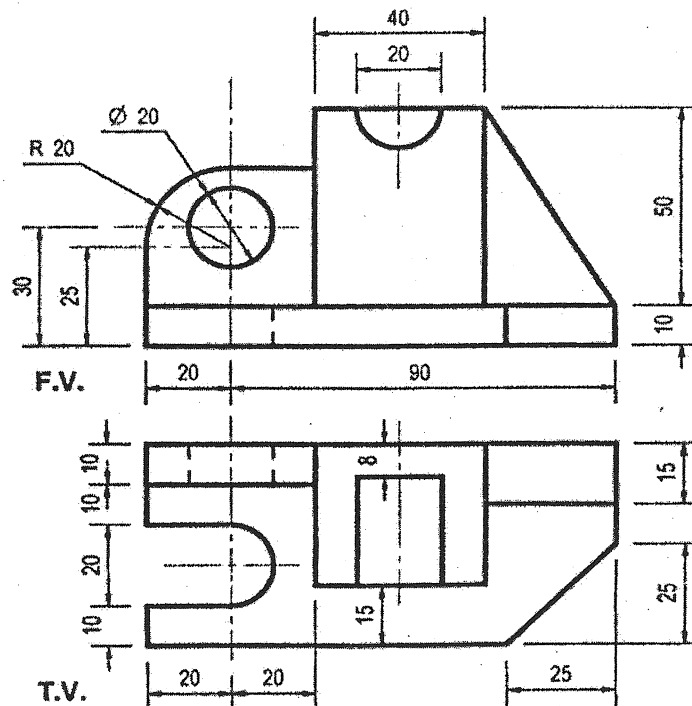b) Fig. (3b) shows front view (FV) & Top view (T.V.) of an object. Draw isometric view.   **16**

Fig. 3 (b)

UNIT - IV

4. a) i)   Explain in brief principles of Energy Management.   4

    ii) Compare two stroke cycle and four stroke cycle engine on following
         aspect : Flywheel, thermal efficiency, noise and cooling & lubrication.   4

    b) Explain the principle of operation and working of nuclear power plant.   8

    c) i)   Compare between open cycle and closed cycle gas turbine plants.   4

    ii) Classify the energy audit and discuss them in brief.   4

UNIT - V

5. a) i)   Explain with schematic diagram the working of single acting
         reciprocating pump.   4

    ii) Explain the working of split air conditioners with schematic diagram.   4

    b) i)   Differentiate between ball & roller bearing.   4

    ii) Classify clutches. Explain working of cone clutch.   4

    c) i)   Explain the throttle valve in brief.   4

    ii) What are actuators and how these are classified.   4

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