



## 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. Answer sheet 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 questions from unit I, IV and V.
5. Attempt **any one** sub question from unit II and III.
6. Solve Units I, II, III on drawing sheets. Solve Unit IV and V on theory answer sheet.
7. Assume suitable data draw sketches if required.
8. Use of drawing instruments is allowed.
9. Figures on right indicate maximum marks.

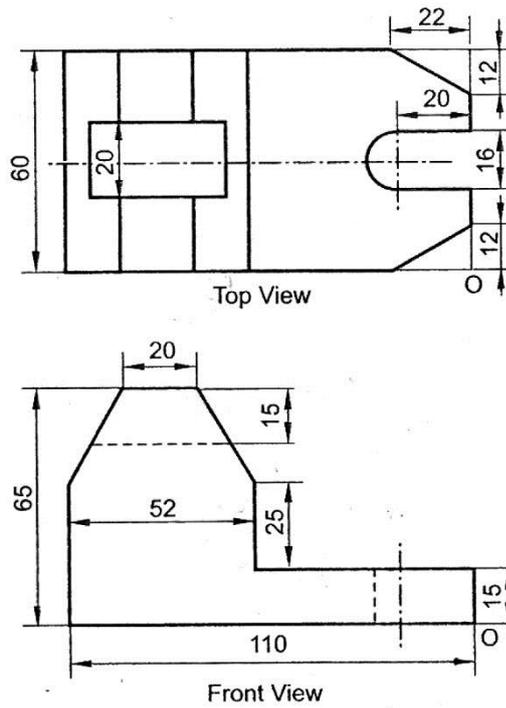
### UNIT – I

1. a) For line AB, 75 mm long, the distance between end projectors is 60 mm. End A of the line is 15 mm above HP and 20 mm in front of VP. The line is parallel to VP. Draw front view, top view and LHSV of line. **8**
- b) A thin circular plate (diameter 60 mm) has a central square hole (25 mm side) in it. Plate rests on a point on its circumference. The plane of plate is perpendicular to VP and inclined at  $45^\circ$  to HP. Draw its front view and top view if one of the diagonals of square hole is parallel to VP. **8**
- c) A thin plate has shape of an isosceles triangle. It has base 40 mm and height 60 mm long. Its base is in VP and its surface is perpendicular to HP. The plate is inclined to VP such that its front view appears as an equilateral triangle. Draw its three views and find the angle made by the plate with VP. **8**

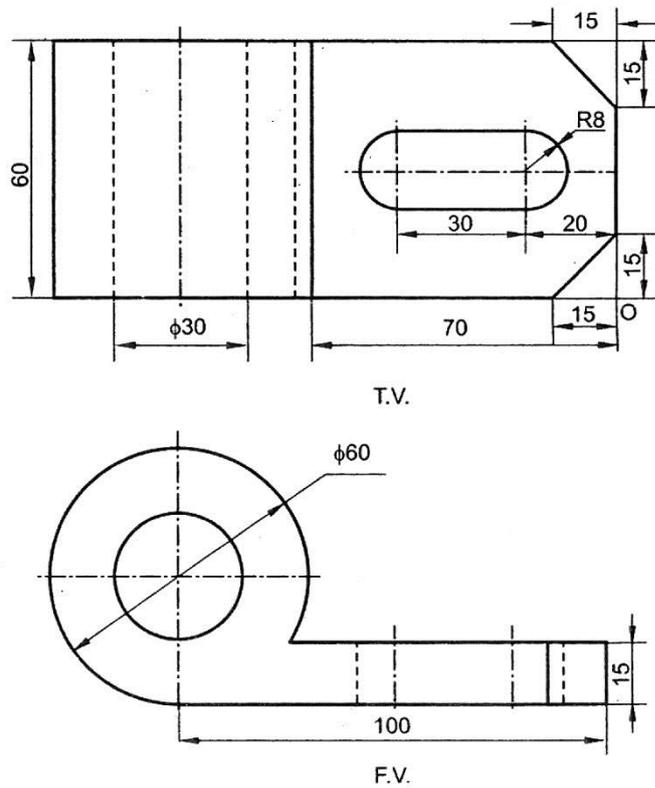
### UNIT - II

2. a) Figure 2 (a) shows pictorial view of an object. Use 1st angle method and draw- front view, top view, right hand side view. **16**





b) Top view and front view of an object are shown in fig. 3 (b). Draw an isometric view taking 'O' as origin. 16



**UNIT - IV**

4. a) i) Define energy. Give units of energy. Write different useful forms of energy. **4**
- ii) Define any two : **4**
- a) Energy strategy                      b) Energy Policy
- c) Energy conservation
- b) i) Explain in brief – Mechanical work and Electric work. **4**
- ii) Give four examples of general electrical energy conservation opportunities. (ECO's). **4**
- c) i) Write working of 4 stroke petrol engine – Sequence of strokes, operation in each stroke and position of valves. **4**
- ii) Give at least two locations each of Hydroelectric power plant and nuclear power plants across India. **4**

**UNIT - V**

5. a) i) Draw a simple sketch of centrifugal pump with its parts labelled. **4**
- ii) What materials are used for pump casing and impeller. Write any four applications of centrifugal pump. **4**
- b) i) Give classification of machine elements with suitable examples. **4**
- ii) State the function of gears. Compare Bevel gear and worm & worm wheel for – (i) axes of shafts, (ii) speed reduction ratio (iii) applications. **4**
- c) What is air motor ? Draw a line sketch and explain construction and working of vane type air motor. Write advantages of air motor. **8**

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