Total No. of printed pages = 10

Me-101/ED/1st Sem/2018/M

ENGINEERING DRAWING

Full Marks – 100

Time – Four hours

The figures in the margin indicate full marks for the questions.

Assume suitable dimension where necessary.

SECTION – A

All questions are compulsory.

1. Choose the correct answer : 1×15=15

(i) Which of the following is softest pencil ?

(a) 2B (b) 1B

(c) HB (d) H

(ii) Which of the following equipments are used for drawing curves of different radii ?

(a) French curves (b) Set-square

(c) T-square (d) Protector

(iii) The line connecting a view to note is called

(a) dimension line (b) projection line

(c) leader (d) arrow heads

(iv) Which of the following angle cannot be made with either a 45° or 30°/60° Set-square ?

(a) 90° (b) 70°

(c) 30° (d) 15°

(v) For drawing of small instruments, watches etc. the scale used is

(a) reduced scale (b) full scale

(c) enlarged scale (d) None of these

(vi) 10m length is represented as 1 mm on the map then representative fraction is

(a) $\frac{1}{100}$ (b) $\frac{1}{1000}$

(c) $\frac{1}{10}$ (d) None of these

(vii) If the object lies in the fourth quadrant, its position with respect to reference plane will be

(a) in front of VP and above HP

(b) behind VP and below HP

(c) in front of VP and below HP

(d) behind VP and above HP

(viii) When the line is parallel to VP and perpendicular to HP, we can get its true length in

(a) front view (b) side view

(c) both (a) and (b) (d) top view

(ix) Length (L) of line in Isometric view will be equal to

(a) 0.707 L (b) 0.815 L

(c) True length L (d) 0.866 L

(x) A circle will appear on an isometric drawing as a(n)

(a) Ellipse (b) Cycloid

(c) Circle (d) Parabola

(xi) In first angle projection system, plan is drawn

(a) above elevation

(b) below elevation

(c) left of the elevation

(d) right of the elevation

(xii) Maximum number of orthographic views of an object is

(a) two (b) three

(c) four (d) six

(xiii) The crest diameter of a screw thread is the

(a) minor diameter (b) major diameter

(c) core diameter (d) None of the above

(xiv) The angle of ACME thread is

(a) 29° (b) 39°

(c) 59° (d) None of the above

(xv) If the plate thickness is given ast. in mm, which of the following empirical relationship can be used to ascertain the diameter D of the rivet ?

(a) $D = 6t$ (b) $D = t\sqrt{6}$

(c) $D = 6\sqrt{t^3}$ (d) $D = 6\sqrt{t}$

2. Fill up the blanks in the following sentences by appropriate words : $1 \times 5 = 5$

(i) Lettering is usually done in ———.

(ii) Centre lines are drawn as ———.

(iii) The two systems of placing dimensions are ——— and ———.

(iv) In isometric view, projectors are ——— to plane of projection.

(v) The curve traced by a point keeping its distance fixed from a fixed point in a plane is ———.

3. State true or false : $1 \times 5 = 5$

(i) The representative fraction is always < 1

(ii) Each side of a hexagon is equal to the radius of the circumscribed circle.

(iii) The profile plane is the plane upon which the side view is projected.

(iv) Pitch is equal to 12 divided by the number of threads per inch.

(v) Rivets are not considered permanent fasteners.

SECTION – B

Answer any *five* questions.

4. (a) Write the following in single stroke vertical style. Height of the letters should be 18 mm. Attention may be given to the thickness, shape of letters, spacing and the general arrangement. 10

"A THING WHEN LOST IS VALUED MOST"

(b) Write the following in single stroke, vertical style and height 15 mm. 5

(i) $5\frac{7}{9}$ (ii) 364

5. (a) Divide a line PQ 80 mm long into ratio 2:3:4. 3

(b) Draw an equilateral triangle of 60 mm altitude with the aid of compass. 2

(c) Bisect the given angle of 90° 2

(d) Find the centre of a given arc of radius 20 mm. 2

(e) Construct a regular octagon about a given circle of radius 40 mm. 6

6. (a) Construct a scale of 1:400 to show meters and long enough to measure upto 60 meters. Measure a distance of 44 meters on the scale. 4

(b) Draw a diagonal scale of R.F = $\frac{3}{100}$ showing metres, decimetres and centimetres and to measure upto 5 metres. Show the length of 3.69 metres on it. 6

(c) A rectangular plot of 25 square kilometers is represented on a certain map by a similar rectangle area 1 square centimeter. Draw a plain scale to show kilometers. Find representative fraction and measure a distance of 65 kilometers. 5

7. (a) Draw the projections of the following points on the same ground line keeping projections 35mm apart.

(i) Point A is 45mm above HP and 30 mm in front of VP.

(ii) Point B is 30mm above HP and 40 mm behind VP.

(iii) Point C is 25mm below HP and 30mm in front of VP.

(iv) Point D is 25mm below HP and 40mm behind VP.

(v) Point E is in both HP and VP.

(b) A 70 mm long line PQ has its end P 20mm above HP and 30mm in front of the VP. The line is inclined at 45° to the HP and 30° to the VP. Draw its projection. 7½

8. (a) Draw the isometric projection of a cone of base 40mm diameter and height 60mm when it rests with its base on HP. 5

(b) Figure : 1 shows an isometric view of an object. Using first angle projection method, draw the following views : 10

(i) Front view

(ii) Top view and

(iii) Right side view.

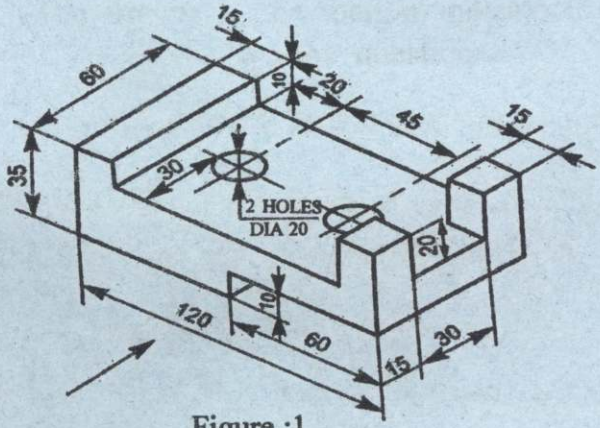

Figure :1

9. (a) Draw any three screw thread profile for 20mm pitch from the following : 3×3=9

(i) Seller thread

(ii) Acme thread

(iii) Buttress thread

(iv) Knuckle thread

(b) Draw two views of a hexagonal nut for a 20mm bolt diameter according to rough rule dimensions. 6

10. Sketch neatly the sectional front and top view of a double riveted lap joint using rivet in chain arrangement. Take thickness of plates 11mm. Mention all calculations and dimensions clearly. 7+5+3=15