

Friday, August 7, 2009

GTU 110013 Engineering Graphics Jun 2009 Question Paper

BE Second Semester Exam

(Common to all Branches)

Time: 3 hrs

Maximum Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use both the side of answer sheet.
5. Lines, dimensions etc. should be as per BIS SP-46
6. Retain all construction lines.
7. All dimensions are in mm.
8. Figures/sketches are not to the scale.
9. Neatness is expected.

1. a) Figure 1 shows the three dimensional pictorial view of an object. Draw using first angle projection method, front view, top view and side view. **7 marks**

Ans: Refer article 7.15 of ED - Basant Agrawal, TMH.

1. b) Figure 2 shows two views of an object. Draw using first angle projection method, sectional elevation and plan. **7 marks**

Ans: Refer article 7.26 of ED - Basant Agrawal, TMH.

2. a) Draw Isometric view for the object shown in Figure 3. **7 marks**

Ans: Refer article 15.14 of ED - Basant Agrawal, TMH.

2. b) Figure 4 shows an offset slider crank mechanism. Crank OB is 30 mm long and rotates in clockwise direction. Connecting rod AB is 128 mm long. Offset is 40 mm. Draw the loci of two points P and R. PB and BR are 45mm and 30 mm respectively. **7 marks**

Ans: Refer problem 6 page 6.22 of ED - Basant Agrawal, TMH.

OR

2. b). (i) Construct a plain scale to show kilometers and hectometers when 25 mm is equal to 1 km and long enough to measure up to 6 km. Find RF and show a distance of 3km and 4 hectometer on the scale. **4 marks**

Ans: Refer problem 4.5 page 4.5 of ED - Basant Agrawal, TMH.

2. b) (ii). Draw an isometric scale and show a measurement of 46mm on the scale. **3 marks**

Ans: Refer Fig. 15.4 page 15.4 of ED - Basant Agrawal, TMH.

3. a) The distance between end projectors of a straight line PQ is 130 mm point P is 40mm below H.P. and 25 mm in front of V.P. Point Q is 75 mm above H.P. and 30 mm behind V.P. Draw the projection of a line and find out its true length and inclination with H.P. and V.P. **7 marks**

Ans: Refer problem 9.16 page 9.38 of ED - Basant Agrawal, TMH.

3. b) ABCDE is a regular pentagonal plate of 40mm sides, has its corner A on the H.P. the plate is inclined at 30° to the H.P. such that the side CD is parallel to both the reference planes. Draw the projection of plate. **7 marks**

Ans: Refer problem 10.17 page 10.18 of ED - Basant Agrawal, TMH.

OR

3. a) The front view of a line AB, 90mm long, measures 65mm. Front view is inclined to XY line by 45° . Point A is 20mm below H.P. and on V.P. Point B is in third quadrant. Draw the projections and find inclinations of line with H.P. and V.P. **4 marks**

Ans: Refer problem 9.27 page 9.30 of ED - Basant Agrawal, TMH.

3. b) A square plate of side 60 mm is held on a corner on H.P. Plate is inclined to the H.P. such that the plan of it is rhombuses with a diagonal of 30 mm. determine the angle it makes with H.P. The other diagonal is inclined at 45° V.P. Draw the projection of plate. **3 marks**

Ans: Refer problem 10.24 page 10.24 of ED - Basant Agrawal, TMH.

4. a) A pentagonal prism, base 30 mm side and axis 70 mm long, is resting on one of the corner of its base on the H.P. The longer edge containing that corner is inclined at 45° to the H.P. The axis of the prism makes an angle of 30° to the V.P. Draw the projections of the solid. **7 marks**

Ans: Refer problem 1 page 11.49 of ED - Basant Agrawal, TMH.

4. b) A square pyramid, base 40 mm side and axis 65 mm long, has its base on the H.P. And all the edges of the base equally inclined to the V.P. It is cut by a section plane perpendicular to the V.P. inclined at 45° to the H.P. and bisecting the axis. Draw its sectional top view, sectional side view and true shape of the section. **7 marks**

Ans: Refer problem 12.31(b) page 12.31 of ED - Basant Agrawal, TMH.

OR

4. a) A Hexagonal prism is resting on one of its side of base (30mm), such that axis(60mm) is inclined at 45° to H.P. and the side on which it is resting is inclined at 30° to V.P. Draw the projections. **7 marks**

Ans: Refer Problem 11.26 page 11.29 of ED - Basant Agrawal, TMH.

4. b) A cylinder 40mm diameter and 70mm height is resting on its base on H.P. It is cut by plane passing through a point 50mm from the base and inclined at 40° to H.P. A through hole of 20mm diameter is drill at 30mm above the base. Develop the lateral surface of the cylinder. **7 marks**

Ans: Refer problem 13.20-13.23 page 13.19 of ED - Basant Agrawal, TMH.

5. a) Draw the development of lateral surface of a right circular cone having base diameter 40 mm and length of axis 60 mm, when it is resting on H.P. and cut by an AIP inclined at 45° to the H.P. and bisecting the axis. **7 marks**

Ans: Refer problem 13.7 page 13.7 of ED - Basant Agrawal, TMH.

5. b) A square pyramid, side of base 30 mm and axis length 50 mm is resting on the H.P. on its base with all sides equally inclined to V.P. it is cut by an AIP inclined at 45° to the H.P. and bisecting the axis. Draw development of lateral surface of the pyramid. **7 marks**

Ans: Refer problem 13.2 page 13.2 of ED - Basant Agrawal, TMH.

OR

5. a) Two points A and B are 100 mm apart. Third point C is 75mm from A and 50mm from B. Draw an ellipse passing through A, B & C. **7 marks**

Ans: Refer problem 5.37 page 5.29 of ED - Basant Agrawal, TMH.

5. b) An elastic string is unwound to a length of 120 mm from a drum of diameter 30 mm. Draw the locus of the free end of the string which is held tight during unwinding. **7 marks**

Ans: Refer problem 6.12 page 6.11 of ED - Basant Agrawal, TMH.

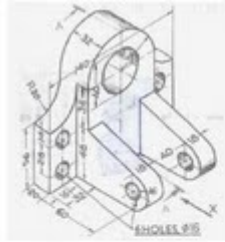


Figure 1

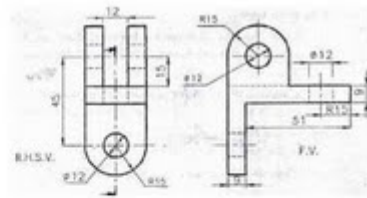


Figure 2

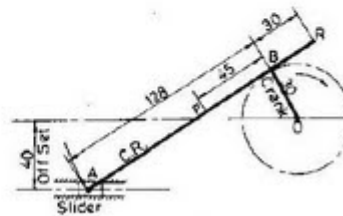
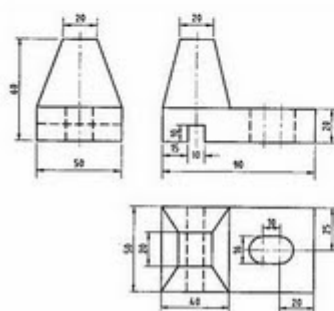


Figure 4