Total No. of printed pages = 6

END SEMESTER (REGULAR/RETEST)
EXAMINATION, MAY/JUNE – 2025

Semester : 4th

Subject Code : Me-406

MACHINE DRAWING

Full Marks – 100

Time – Four hours

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

Instructions :

(i) Question Nos. 1, 2 are compulsory.

(ii) Answer any *five* from the rest.

1. Choose the correct answer for the following : $1 \times 8 = 8$

(a) The development of the surface of a cube consists of _____ equal squares.

(i) Four (ii) Five

(iii) Six (iv) Seven

[Turn over

(b) The development of the lateral surface of a cylinder is a _____ having one side equal to the circumference of its base circle and the other equal to its length.

(i) Square (ii) Rectangle

(iii) Triangle (iv) Circle

(c) Cutting plane is also known as

(i) Vertical plane (ii) Horizontal plane

(iii) Profile plane (iv) Section plane

(d) When a solid completely penetrates another solid, there will be two lines of intersection. These lines are called

(i) Lines of intersection

(ii) Concyclic curves of lines

(iii) Hidden line

(iv) Inside line

(e) Which of the following keyed joint is used for low power transmission ?

(i) Sunk taper key (ii) Flat saddle key

(iii) Round key (iv) Gib head key

(f) Keys, cotter-joints and pin-joints are

(i) Temporary joints

(ii) Permanent joints

(iii) Semi-permanent joints

(iv) None of the above

(g) Pipe material used for domestic work is

(i) Cast iron (ii) Aluminum

(iii) Copper (iv) Galvanized iron

(h) Dead plugs are used to

(i) Close one end of the pipe

(ii) Close both ends of the pipe

(iii) To disconnect the broken pipe

(iv) None of the above.

2 Fill in the blanks with appropriate word/words : $1 \times 7 = 7$

(a) In a flange coupling the flanges are coupled together by means of _____.

(b) A journal bearing in which the bearing pressure is _____ to the axis of the shaft.

(c) In steam engine, the piston rod is usually connected to the _____ by means of a cotter joints.

(d) There are _____ workspaces available to switch between in Auto CAD.

(e) The shape of the development of the lateral surface of a cylinder is _____.

(f) If a solid is cut by a cutting plane parallel to the base of the solid and top part is removed, the remaining part is called _____.

(g) A key made from cylindrical disc having segmental cross-section is called _____.

3. A right regular hexagonal pyramid, edge of base 30 mm and height 75 mm is resting on its base on the H.P., such that one of its base edges is parallel to V.P. It is cut by a section plane perpendicular to the V.P., inclined at 40° to the H.P. and passing through a point on the axis 30 mm above the base. Draw its front view, sectional top view, true shape of the section and also develop the lateral surface of the truncated pyramid. 4+4+4+5=17

4. A right circular cylinder having 60 mm diameter and 90 mm long is standing on H.P. A square prism of 40 mm sides and 80 mm long completely penetrates the cylinder such that both the axes intersect and bisect each other. All the faces of the prism are equally inclined to the H.P. Draw the projections showing curves of intersections. 17

5. (a) Draw 2 (two) views of the following types of keys fitted in a 50 mm diameter shaft : 3+3=6

(i) Sunk taper key

(ii) Parallel / feather key.

(b) Prepare a dimensioned sketch in two views of a Knuckle Joint for joining two 25 mm diameter rods. 6+5=11

6. (a) Draw sectional front view and side view of a Cast-iron flanged joint for connecting 100 mm diameter pipes. 7+4=11

(b) Draw sectional representation and appropriate symbol of the following forms of welded joints : 1×6=6

(i) Fillet (ii) Square butt

(iii) Single V-butt (iv) Double V-butt

(v) Single U-butt (vi) Double U-butt.

7. (a) Sketch neatly two views of fast and loose pulleys mounted on a shaft, showing clearly : 6+5=11

(i) How the fast pulley is fixed to the shaft and

(ii) How the loose pulley is prevented from sliding along the length of the shaft.

(b) Describe with the aid of sketches, the three main kinds of bearings for the shafts. $2\times3=6$

8. (a) Draw half-sectional front view and side view of a protected type flanged coupling showing proportionate dimensions to connect two shafts, each of diameter 40 mm. $6+4=10$

(b) Draw sectional front view of a Stuffing box having diameter of piston rod 40 mm. 7

9. Draw freehand sketches of any *two* of the following showing at least two views : $8.5\times2=17$

(a) 6-splined shaft.

(b) A cone pulley with four steps mounted on a 32 mm diameter shaft.

(c) A foot-step bearing for supporting a 60 mm diameter shaft.

(d) A union pipe joints for 25 mm diameter pipes.