

2024

ENGINEERING DRAWING

(Theory)

Full Marks : 70

Pass Marks : 21

Instructions :

Time : Three hours

- (i) Attempt all the questions.
- (ii) All dimensions are in millimetres.
- (iii) Missing and mismatching dimensions, if any may be suitably assumed.
- (iv) Use both sides of the drawing sheet if necessary.
- (v) Follow the SP : 46 – 2003 revised codes, (With first angle method of projection) if not mentioned.
- (vi) In question 4, hidden edges or lines are to be shown in views without section.

Answer the following Multiple Choice Questions. Rewrite the correct answer on your drawing sheet. 1×5=5

1. An isometric plane is bounded by how many axes?
 - (a) two
 - (b) three
 - (c) four
 - (d) one

2. Drawing that shows the true size and shape of an object is called –
 - (a) Oblique
 - (b) Perspective drawing
 - (c) Auxiliary drawing
 - (d) Orthographic drawing

P.T.O.

3. The threads cut on the surface of a rod are called –
- (a) Crests (b) Roots
(c) External threads (d) Internal threads
4. Which machine part is a permanent joint ?
- (a) Knuckle joint (b) Single riveted lap joint
(c) Gib and cotter joint (d) Turnbuckle
5. The cutting plane line is denoted by :
- (a) Long chain thin line and thick at the ends
(b) Long chain thick line and thin at the ends
(c) One thick and one dotted
(d) Long chain thin line and dotted at the ends

Answer the following questions.

6. Construct an Isometric scale. 3
7. Construct a right regular hexagonal pyramid, base side 30 mm and height 50 mm, is resting on its base on H.P. with two of its opposite base sides, perpendicular to H.P. and V.P. and the axis perpendicular to H.P. Draw the axis and indicate the direction of viewing. Give all dimensions. 7

OR

Draw the Isometric projection of a cone of base diameter 60 mm and axial height 55 mm is resting on its base on H.P. A hemisphere of diameter 60 mm is resting on its circular face on H.P. 7

8. A cylinder of 27 mm base diameter and 50 mm height, with its axis perpendicular to H.P. is resting centrally over a hexagonal slab of 27 mm base edges and 20 mm height, having two of its rectangular faces parallel to V.P. Draw an isometric projection of the combination. Keep their common axis vertical. Give all dimensions. 13

OR

Draw an Isometric Projection of an equilateral triangular pyramid resting vertically and centrally with one base edge, at the back, parallel to V.P. on the top face of a hexagonal prism having two of its rectangular faces parallel to V.P. Side of the triangle = 34 mm, height of pyramid = 50 mm, side of the hexagon = 30 mm and height of the prism = 60 mm. Give all dimensions. 13

9. Draw to scale 1:1, the front view and side view (looking from threaded end of both) of a hexagonal head bolt of size M 30, having length of bolt = 120 mm, threaded length = 80 mm, fitted with a hexagonal nut, having their common axis parallel to H.P. and V.P. Two opposite sides of bolt and nut are parallel to V.P. Give standard dimensions. 8

OR

Draw to scale 1:1, the standard profile of a metric screw thread (internal), taking pitch as = 50 mm. Give standard dimensions. 8

10. Sketch freehand the front view and left-hand view of Plain stud with a square neck of size M 20, keeping the axis parallel to H.P. and V.P. Give standard dimensions. 6

OR

Sketch freehand, the front view and top view of a grub screw of size M 20, keeping its axis vertical. Give standard dimensions. 6

11. Figure – 1 shows the details of the parts of a Protected Type Flange Coupling. Assemble these parts correctly and then draw to scale 1:1 its following views.

- Front view, upper – half in section.
- Side view as seen from left.

Write heading and scale used. Draw the projection symbol. Give all dimensions.

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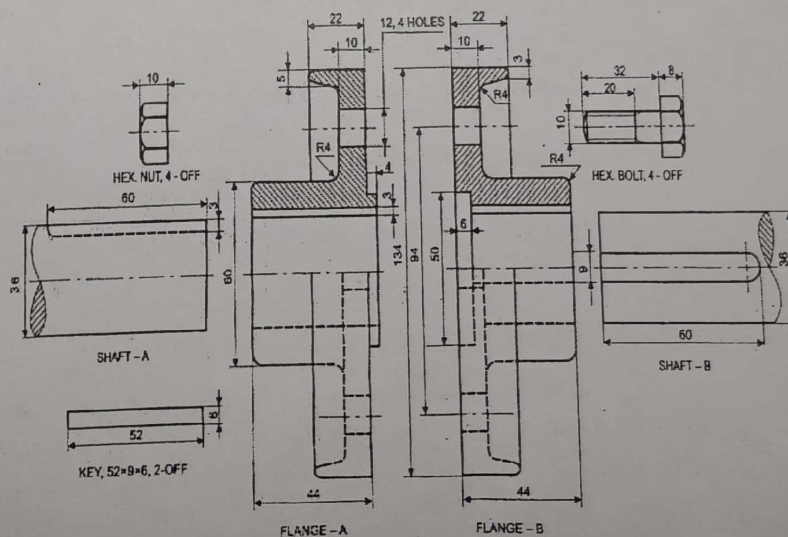


Fig. 1. PROTECTED FLANGE COUPLING (DETAILS)

Fig. 1

OR

Figure 2. shows the assembly of a Sleeve and cotter joint. Disassemble the parts correctly and then draw to scale 1 : 1 the following, without changing their position with respect to H.P. and V.P.:

- Sleeve : Front view full in section, top view and right-hand side view.
- Rod A : Front view full in section, top view and left-hand side view.

Write their titles and scale used. Draw the projection symbol. Give all main dimensions.

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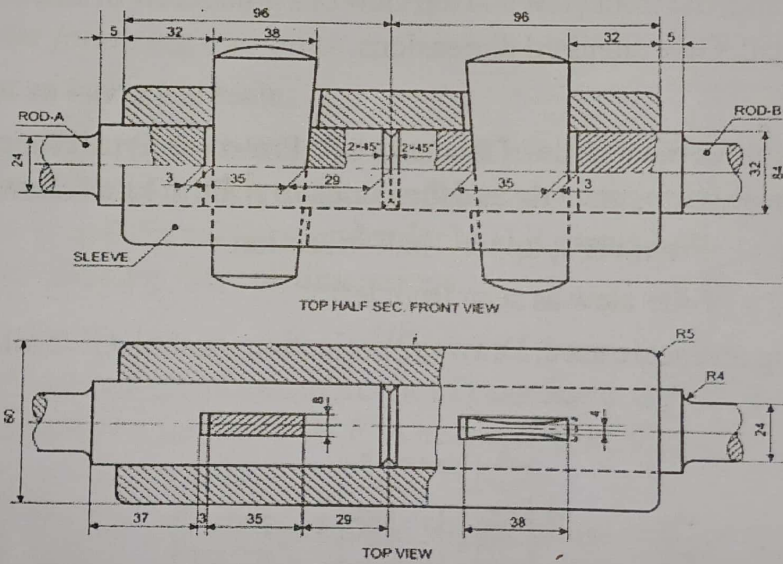


Fig. 2 SLEEVE AND COTTER JOINT