2023

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.

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

i.   The ratio of the isometric length to the true length is –

A.   3 : 2   C.   0.92 : 1

B.   0.816 : 1   D.   1 : 2

ii. An inclined edge of an object in isometric projection is obtained by :

A.   Using angle of inclination

B.   Co – ordinate method

C.   Drawing a line at 90° to the horizontal

D.   Drawing a line at 60° to the vertical

iii. In Isometric projection, the three principal axes are inclined at what angles with the horizontal base line ?

A. 30° , 90°, 60°   C. 60°, 90°, 60°

B. 30°, 120°, 30°   D. 30°, 90°, 30°

iv. A cotter joint is used to connect two :

A. Co-axial rods   C. Parallel rods

B. Perpendicular rods   D. Rods in any position

v. Gib is always provided in conjunction with :

A. Key   C. Bolt

B. Cotter   D. Rivet

2. (a) Construct an Isometric scale.   3

(b) Draw the isometric projection, to isometric scale of a cylinder of base diameter 44 mm and 88 mm length, with its axis horizontal and parallel to V.P. Draw the axis and indicate the direction of viewing. Give all dimensions.

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(c) Construct an Isometric Projection of a vertical regular pentagonal pyramid resting centrally, having one base edge away from the observer parallel to V.P., on top of a vertical cylinder. Side of the pentagon = 32 mm, height of pyramid = 50 mm, diameter of cylinder = 76 mm and height of cylinder = 40 mm. Draw the isometric projection of the two solids, placed together. Give all dimensions.   13

3. (a) Draw to scale 1:1, the front view and side view as seen from threaded end side of a square headed bolt having shank diameter = 24 mm, threaded length of bolt = 54 mm, keeping its axis horizontal. Give standard dimension. 8

OR

Draw to scale 1:1, the standard profile of a Knuckle Thread, taking pitch = 40 mm. Give all standard dimensions.

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(b) Sketch freehand, the front view and top view of a collar stud, keeping the axis perpendicular to H.P.. Take nominal diameter=20 mm. Give all standard dimensions. 6

OR

Sketch a freehand, the front view and left hand side view of 60°countersunk flat head rivet of diameter 25 mm, keeping its axis parallel to H.P. and V.P. Give all standard dimensions. 6

4. Figure 1. shows the assembly of a 'Bushed Bearing', with left half in section. Disassemble the parts as per the direction given below and then draw to scale 1:1 the following :

a. i.   Full sectional front view of the 'BODY' looking in the direction of arrow A, and

ii. Left-hand side view. ·

Write heading and give important dimensions.

b. i.   Full sectional front view of the 'BUSH' looking in the direction of arrow A, and

ii. Left-hand side view.

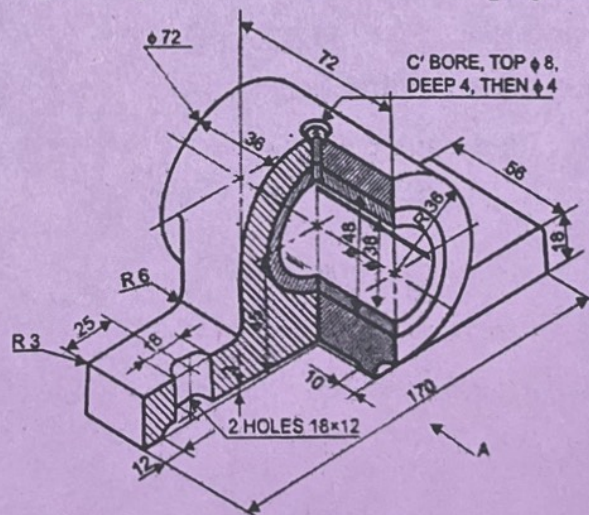Write heading and give important dimensions. Draw projection symbol also. 28

Fig. 1   BUSHED BEARING

Fig. 1

Figure 2. shows the details of 'socket and spigot cotter joint' for round rods Assemble the details and draw the following views in scale 1:1 :

a.   Top half sectional elevation.

b.   Side view as viewed from the left

Write heading and scale used. Draw the projection symbol. Give all main dimensions.   28
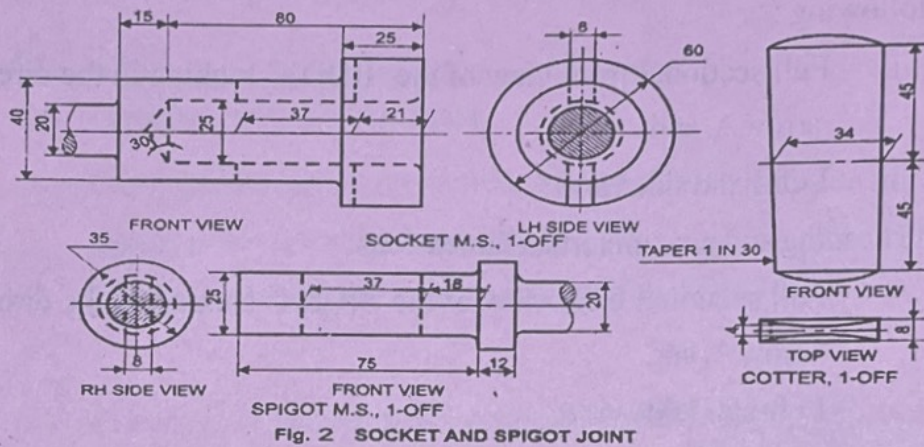

Fig. 2   SOCKET AND SPIGOT JOINT

Fig. 2

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