

CBSE Class 12 Engineering Graphics 2020 - Set 68



Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 3 Hours

Maximum Marks: 70

General Instructions

- (i) Attempt all the questions.
- (ii) Use both sides of the drawing sheet, if necessary.
- (iii) All dimensions are in millimetres.
- (iv) Missing or mismatching dimensions, if any, may be suitably assumed.
- (v) Follow the SP 46:2003 revised codes, with first-angle method of projection.
- (vi) In Question 2, no hidden edges or lines are required.
- (vii) In Question 4, hidden edges or lines must be shown in views without section.
- (viii) Number your answers according to the questions.

Questions

1. Answer the following multiple choice questions. Print the correct choice on your drawing sheet. $1 \times 5 = 5$

1(i). In first angle method of projection

- | | |
|---|---|
| (A) The object lies between the observer and the plane of projection. | (B) The plane of projection lies between the observer and the object. |
| (C) The observer lies between the object and the plane of projection. | (D) The object lies between the poles. |

1(ii). A square thread of nominal diameter 40 mm and pitch 4 mm is designated as

- | | |
|----------------------|------------|
| (A) SE 40 $\times$ 4 | (B) SQ 160 |
| (C) SQ 40 $\times$ 4 | (D) SE 160 |

1(iii). A J-bolt is usually provided with a square neck to

- | | |
|--|---|
| (A) Add tension to the bolt. | (B) Prevent the bolt rotation while tightening. |
| (C) Prevent its use in machine tool table. | (D) To look better. |

1(iv). Which of the following are the components of an assembly of Gib and Cotter Joint ?

- | | |
|--|--|
| (A) Rod with socket end, rod with spigot end, gib and cotter | (B) Flanges, rods, gib and cotter |
| (C) Sleeve, rods, gib and cotter | (D) Rod with fork end, eye end rod, gib and cotter |

1(v). The crowning provided on the rim of a flat belt pulley is usually

- | | |
|-----------|------------|
| (A) 2 mm | (B) 20 mm |
| (C) 50 mm | (D) 100 mm |

2(i). Construct an isometric scale of length 70 mm.

2(ii). A cone (base diameter 60 mm, height 70 mm) is resting on its base on H.P. Its axis is perpendicular to H.P. Draw its isometric projection. Show the axis and indicate the direction of viewing. Give all the dimensions.

2(iii). A horizontal pentagonal prism (base edge 25 mm, length of axis 60 mm) is resting on one of its rectangular faces, centrally on the top surface of a cube (side 50 mm). The axis of the cube is perpendicular to H.P. and the axis of the prism is perpendicular to V.P. Draw the isometric projection of the combination of solids. Show the common axis and indicate the direction of viewing. Give all the dimensions.

3(i). Draw to scale 1 : 1, the standard profile of a **British Standard Whitworth thread (BSW)**, taking enlarged pitch as 40 mm. Give standard dimensions.

OR

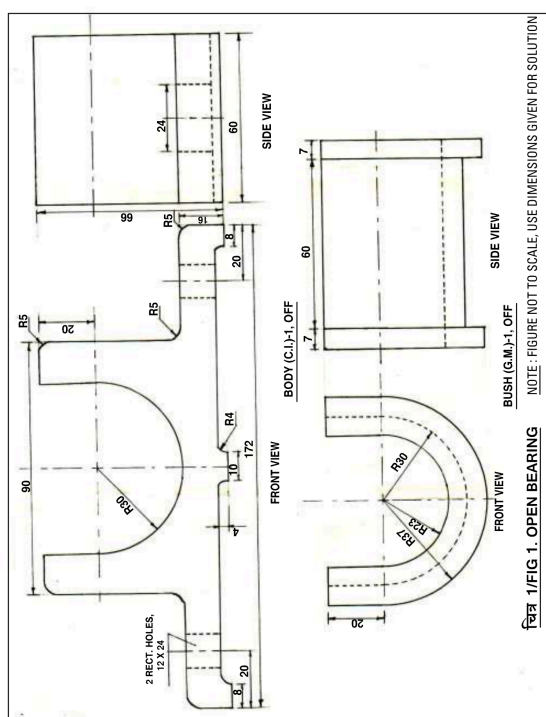
3(i). Draw to scale 1 : 1, the sectional front view of a **Single Riveted Lap Joint** for joining the plates, each of thickness 9 mm. Give standard dimensions.

3(ii). Sketch freehand, the front view and side view of a Horizontal **Collar Stud** of diameter 15 mm. Keep its axis parallel to VP and HP. Give standard dimensions.

OR

3(ii). Sketch freehand, the front view and top view of a **Cheese Head Screw** of diameter 20 mm keeping its axis vertical. Give standard dimensions.

4. Figure 1 shows the details of parts of an **Open Bearing**. Assemble these parts correctly and then draw to scale 1 : 1 its following views :



An enlarged drawing is provided in the drawing references at the end of this paper.

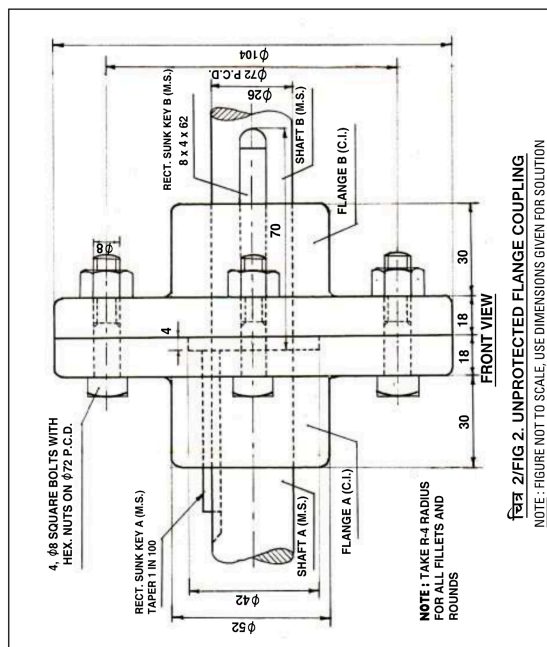
4(i). Front view left half in section

4(ii). Top view

4(details). Print the title and scale used. Draw projection symbol. Give 6 important dimensions.

OR

4. Figure 2 shows the assembly of an **Unprotected Flange Coupling**. Disassemble the parts correctly and then draw to scale 1 : 1 its following views of the following components. Keep the same position of both flange and shaft with respect to H.P. and V.P.



An enlarged drawing is provided in the drawing references at the end of this paper.

4(i)(a). FLANGE A

Front view upper half in section

4(i)(b). FLANGE A

Left side view

4(ii)(a). SHAFT B

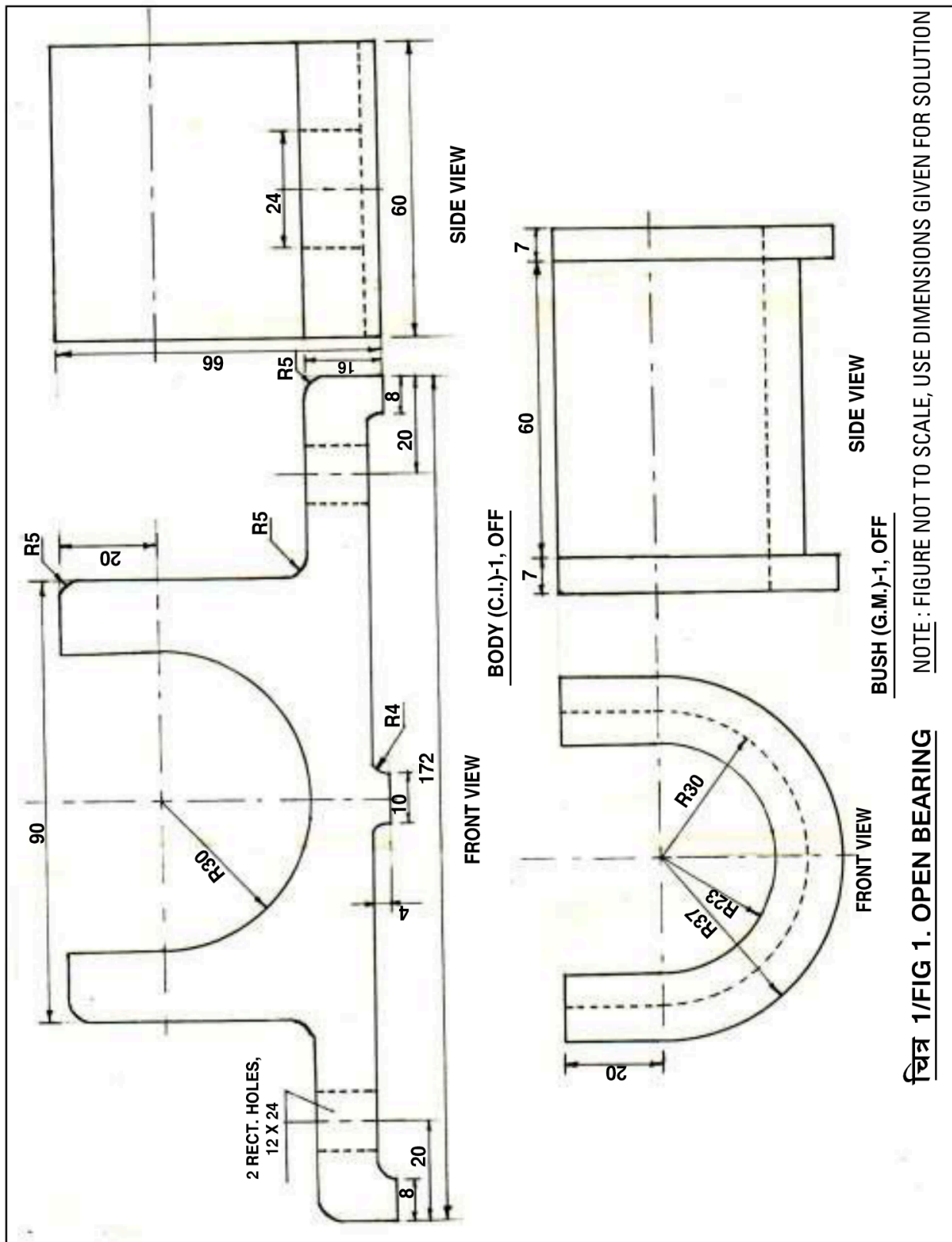
Front view

4(ii)(b). SHAFT B

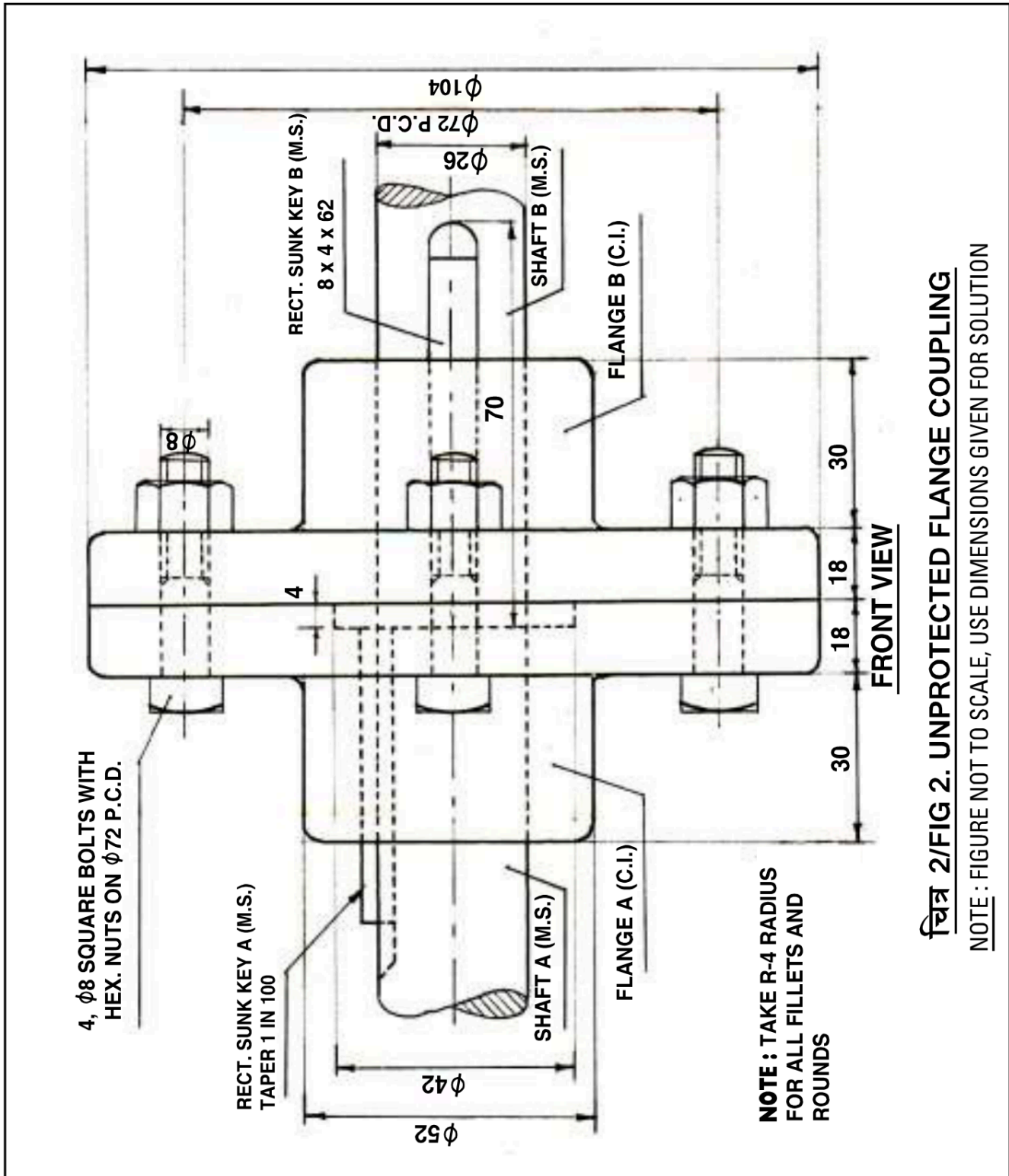
Right side view

4(details). Print the titles of both and scale used. Draw the projection symbol. Give 6 important dimensions.

Question 4 — Figure 1



Question 4 — alternative — Figure 2



चित्र 2/FIG 2. UNPROTECTED FLANGE COUPLING

NOTE : FIGURE NOT TO SCALE, USE DIMENSIONS GIVEN FOR SOLUTION

- End of Question Paper -