

CBSE Class 12 Engineering Graphics 2026 - 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 24, no hidden edges or lines are required.
- (vii) In Question 23, hidden edges or lines must be shown in views without section.

Section A

Q. 1 to Q. 14 : Answer the following multiple choice questions. Print the correct choice on your drawing sheet.
 $14 \times 1 = 14$

1. Pictorial drawings, used to communicate the structure of objects to others are called _____

- | | |
|-----------------------------|--------------------------|
| (A) Multiple plane drawings | (B) Three plane drawings |
| (C) Two plane drawings | (D) One plane drawings |

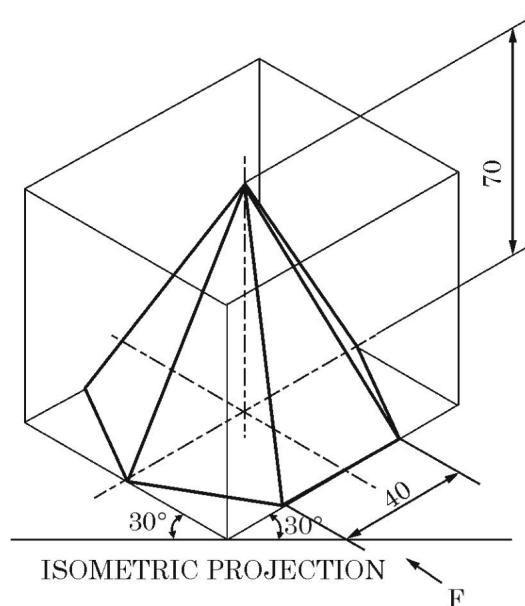
2. A non-isometric line is drawn by

- | | |
|--|---|
| (A) using angle of inclination. | (B) using co-ordinate method. |
| (C) using a line parallel to 45° to horizontal. | (D) using a line perpendicular to horizontal. |

3. Isometric projection is a type of _____.

- | | |
|----------------------------|-----------------------------|
| (A) Axonometric projection | (B) Orthographic projection |
| (C) Oblique projection | (D) Perspective projection |

4. Select the correct statements for the given figure.



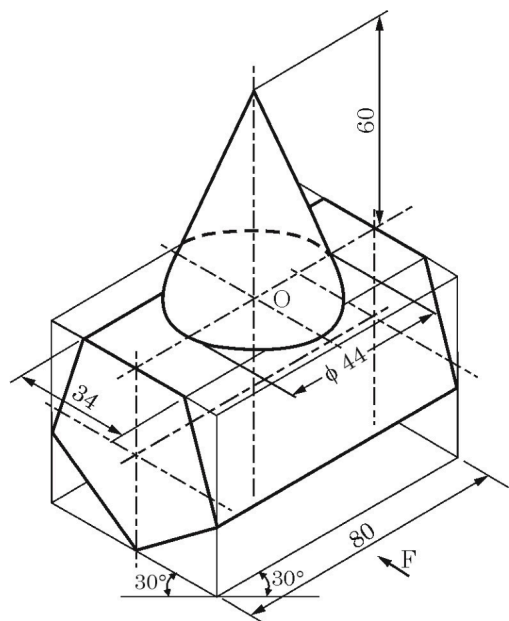
1. A hexagonal pyramid is placed with the axis perpendicular to V.P. and parallel to H.P.
2. The solid is kept with a pair of base edges parallel to V.P.
3. The solid is an example of solid of revolution.
4. The solid has total no. of seven surfaces.

- | | |
|------------------------|-------------------------|
| (A) (i) and (iv) only | (B) (i) and (ii) only |
| (C) (ii) and (iv) only | (D) (iii) and (iv) only |

5. The side view of an object is shown on which plane ?

- | | |
|--------------------|----------------------|
| (A) Vertical plane | (B) Profile plane |
| (C) Parallel plane | (D) Horizontal plane |

6. Match the List – I with List – II for the given isometric projection of combination of solids :



ISOMETRIC PROJECTION

List – I	List – II
(1) Pentagonal surface	(i) parallel to H.P and perpendicular to V.P
(2) Axis of upper solid	(ii) perpendicular to H.P and V.P both
(3) One rectangular surface	(iii) parallel to V.P and H.P both
(4) Axis of lower solid	(iv) perpendicular to H.P and parallel to V.P

- (A) 1-(ii), 2-(iv), 3-(i), 4-(iii) (B) 1-(ii), 2-(i), 3-(iii), 4-(iv)
- (C) 1-(iii), 2-(ii), 3-(iv), 4-(i) (D) 1-(iv), 2-(ii), 3-(i), 4-(iii)

7. Match the List – I with List – II :

List – I (Fastener)	List – II (Tool)
(1) Screw	(i) Allen key
(2) Hexagonal socket head screw	(ii) Spanner
(3) Cotter	(iii) Screw driver
(4) Nut-bolt	(iv) Hammer

- (A) 1-(iii), 2-(ii), 3-(iv), 4-(i) (B) 1-(iv), 2-(i), 3-(iii), 4-(ii)
- (C) 1-(iii), 2-(i), 3-(iv), 4-(ii) (D) 1-(iv), 2-(iii), 3-(i), 4-(ii)

8. The thickness of flat head rivet for diameter 'd' is :

- (A) 0.2 d (B) 0.25 d
- (C) 0.3 d (D) 0.35 d

9. Chamfer is conical round off to the prism of bolt head at :

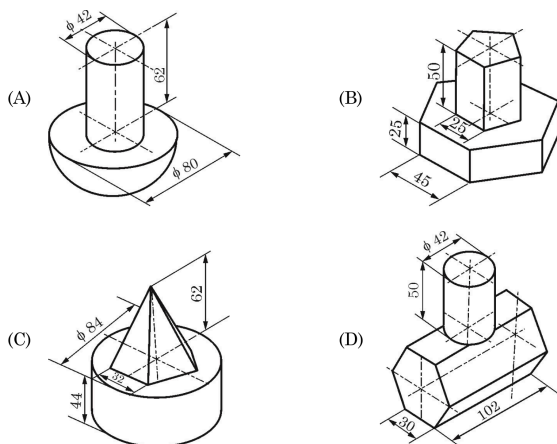
- (A) an angle of 15° on the outer end face. (B) an angle of 30° on the inner end face.
- (C) an angle of 15° on both end face. (D) an angle of 30° on the outer end face.

10. Select the correct option regarding plain washer.

1. A circular plate having a square hole in its centre.
2. The standard inner diameter is ' $d + 1$ '.
3. Its outer diameter is ' $2d$ '.
4. It is placed below the nut.

- (A) (i) and (ii) only (B) (ii) and (iii) only
(C) (ii) and (iv) only (D) (iii) and (iv) only

11. Identify the combination of solids which is an example of combination of polyhedron.



12. The isometric projection of a sphere of radius 'R' is drawn using radius equal to :

- (A) Isometric R (B) 0.5 R
(C) 2R (D) True R

13. The holes for the bolts in the sole plate of bearings are elongated towards the width, to facilitate :

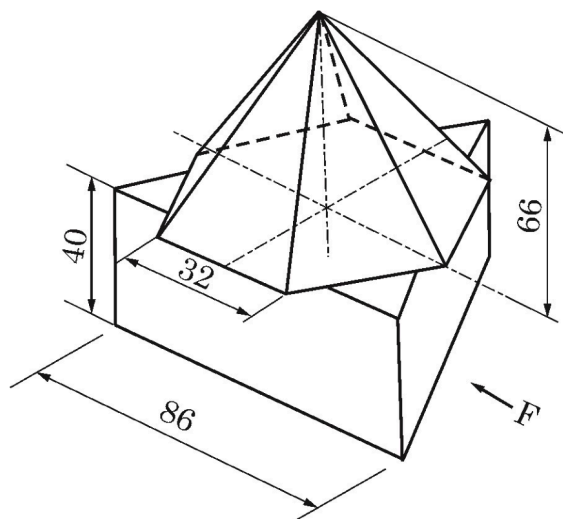
- (A) any misalignment while fitting. (B) larger bolts than recommended.
(C) axial upliftment of bolt. (D) to reduce the cost.

14. Two square cross sectional rods are joined

- (A) by Sleeve and cotter joint (B) by Gib and cotter joint
(C) by Tie rod joint (D) by Flange joint

Section B

Q. 15 to Q. 18 : Observe the given figure of combination of solids and answer the questions given below : $4 \times 1 = 4$



15. How many triangular surfaces are there ?

- | | |
|-------|-------|
| (A) 5 | (B) 6 |
| (C) 7 | (D) 8 |

16. The total height of the combination of solids is :

- | | |
|------------|------------|
| (A) 66 mm | (B) 40 mm |
| (C) 106 mm | (D) 118 mm |

17. The axis of lower solid is :

- | | |
|--|--|
| (A) horizontal | (B) vertical |
| (C) inclined to horizontal at 60° | (D) inclined to vertical at 60° |

18. The upper solid is :

- | | |
|---|---|
| (A) a pentagonal prism having axis perpendicular to V.P. | (B) a triangular prism having axis parallel to H.P. |
| (C) a hexagonal pyramid having axis perpendicular to V.P. | (D) a hexagonal pyramid having axis perpendicular to H.P. |

Q. 19 to Q. 22 : Read the following paragraph and answer the questions given below : $4 \times 1 = 4$

Rahul was repairing his bicycle for unknown noises. He found some fasteners were loose. In his tool box, he found various fasteners. Help him in resolving his queries :

19. Rahul found a bolt of 20×2 , where 2 represents :

- | | |
|-------------------------|--|
| (A) Thickness of bolt | (B) Number of threads per mm |
| (C) Double start thread | (D) Distance between two corresponding points on the adjacent threads. |

20. Which one is not a temporary fastener ?

- | | |
|-----------|-----------|
| (A) Bolt | (B) Rivet |
| (C) Screw | (D) Stud |

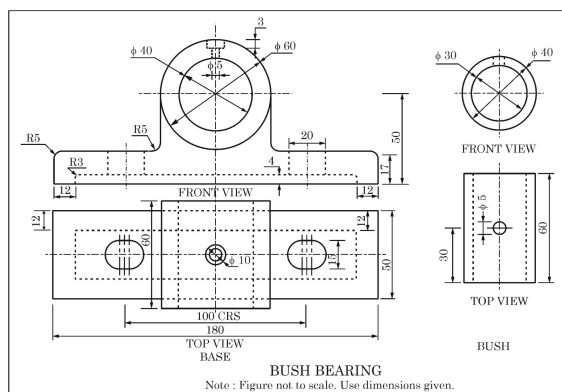
21. M in M8, M10, M12 on bolts stands for

- | | |
|--------------------|--------------------|
| (A) Metric thread | (B) Mean diameter |
| (C) Major diameter | (D) Minor diameter |

22. Distance moved by a nut in the axial direction in one rotation is called

- (A) Pitch (B) Angle of thread
(C) Lead (D) Flank

23(a). Fig. 1 shows the details of the parts of a Bush Bearing. Assemble all these parts correctly and then draw to scale 1 : 1 in its following views :



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

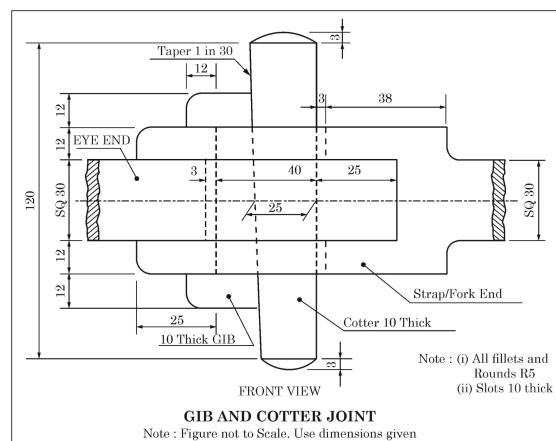
23(a)(i). Front view right half in section

23(a)(ii). Top view

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

OR

23(b). Fig.-2 shows the assembly of a Gib and Cotter Joint. Disassemble the parts correctly and then draw to scale 1 : 1, its following views of the following components. Keep their position same with respect to both H.P. and V.P.



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

23(b)(i)(a). STRAP

Front view lower half in section

23(b)(i)(b). STRAP

Top view

23(b)(ii)(a). GIB

Front view

23(b)(ii)(b). GIB

Top view

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

Section C

24(a). Construct an isometric scale.

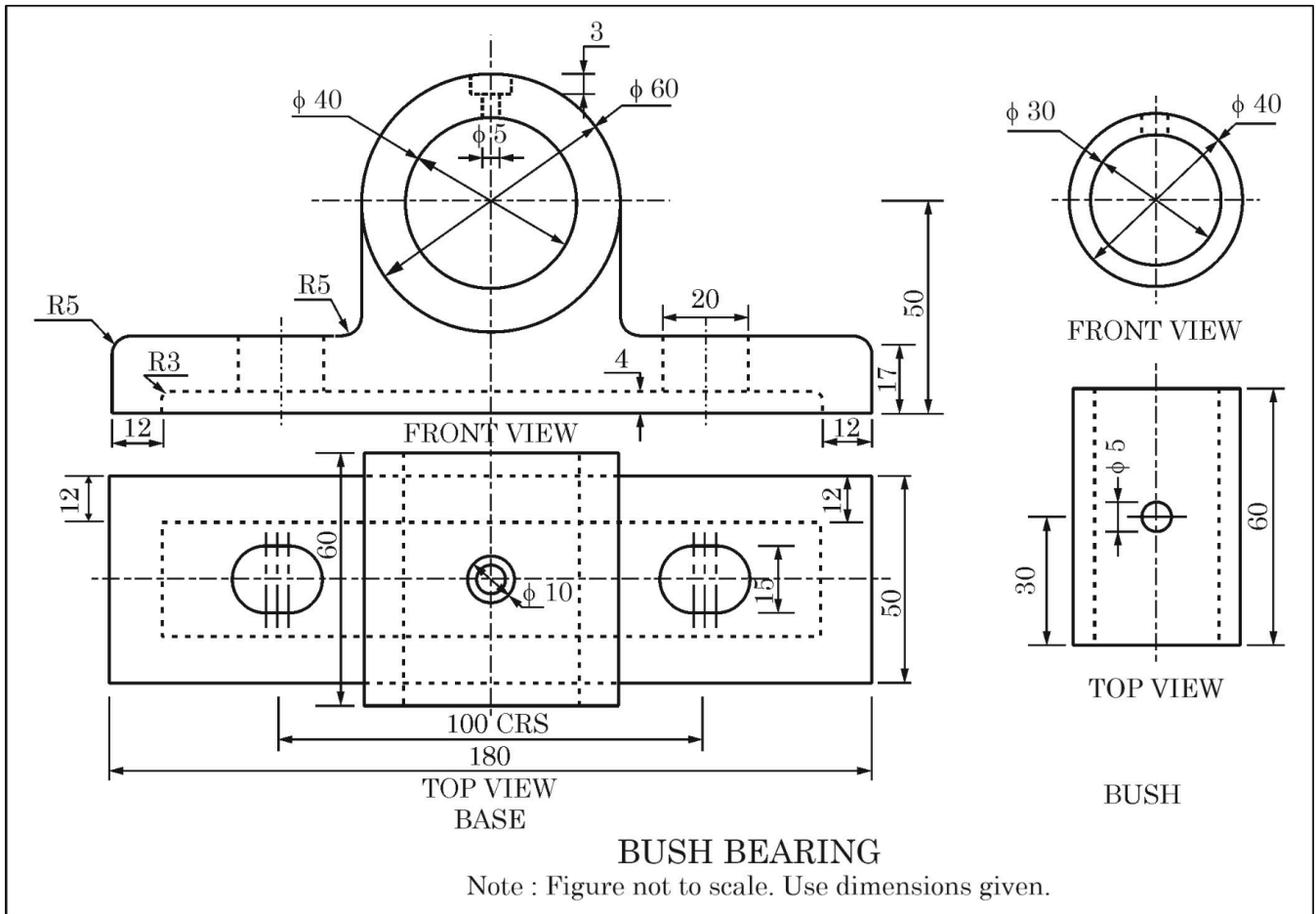
24(b). Draw the isometric projection of an upright cone (diameter 60 mm, axis 90 mm). It is placed on H.P. on its base. Indicate the direction of viewing. Give all the dimensions.

25(a). Draw to scale 1 : 1, the standard profile of **KNUCKLE THREAD** taking enlarged pitch as 50 mm. Give standard dimensions.

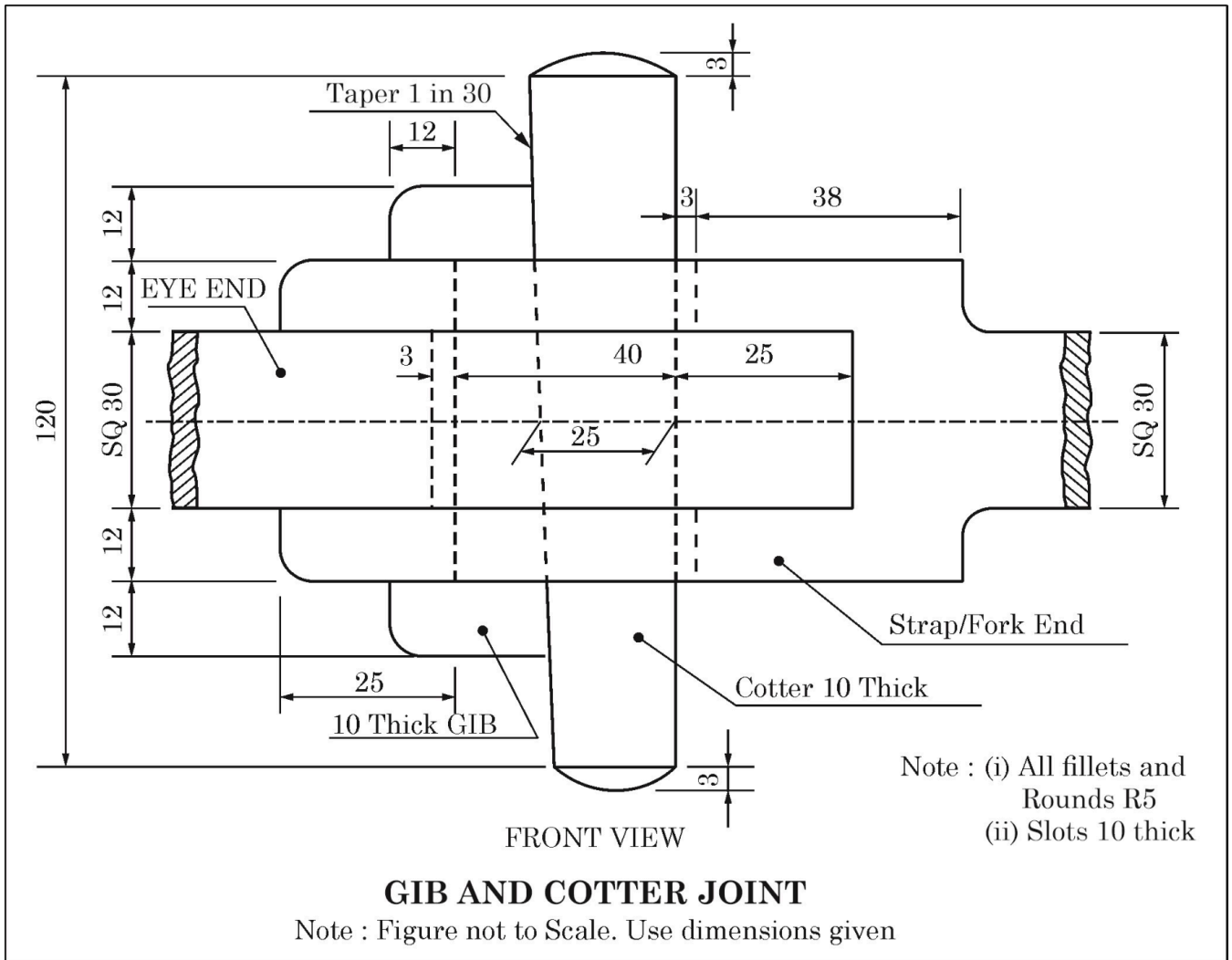
OR

25(b). Draw to scale 1 : 1, the front view and top view of a **HEXAGONAL NUT** of diameter 25 mm. Keep its axis vertical. Give standard dimensions.

Question 23(a) — Figure 1



Question 23(b) — alternative — Figure 2



- End of Question Paper -