

CBSE Class 12 Engineering Graphics 2023 - Set 68 - Compartment



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 21, 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. 8 answer the following Multiple Choice Questions. Print the correct choice on your drawing sheet :

1. The three forms of pictorial projections are

- | | |
|-------------------------------------|--|
| (A) oblique, perspective and linear | (B) axonometric, oblique and perspective |
| (C) perspective, linear and skewed | (D) axonometric, offset and co-ordinate |

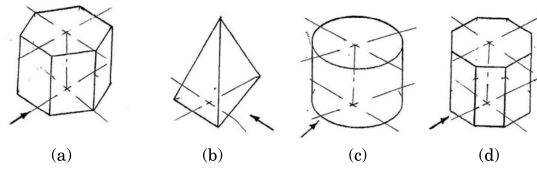
2. Other than the first angle method of orthographic projection, _____ method of projection can also be used in Engineering Drawing practices.

- | | |
|-----------------|------------------|
| (A) fifth angle | (B) fourth angle |
| (C) third angle | (D) second angle |

3. In isometric projection, how many scales are needed to measure along each of the three isometric axes ?

- | | |
|-------|-------|
| (A) 4 | (B) 3 |
| (C) 2 | (D) 1 |

4. Select the solid which is not a polyhedron.



5. The shape of woodruff key is _____.

- | | |
|-----------------|-------------------|
| (A) Rectangular | (B) Square |
| (C) Circular | (D) Semi-circular |

6. The purpose of Gib in Gib and Cotter Joint is _____.

- | | |
|----------------------------------|--|
| (A) to join the cotters together | (B) to arrest the opening of the jaws of the strap |
| (C) to join the shafts together | (D) to arrest the motion of the shafts |

7. The rods in a tie rod joint are externally threaded and the holes in the cylindrical body are _____ threaded.

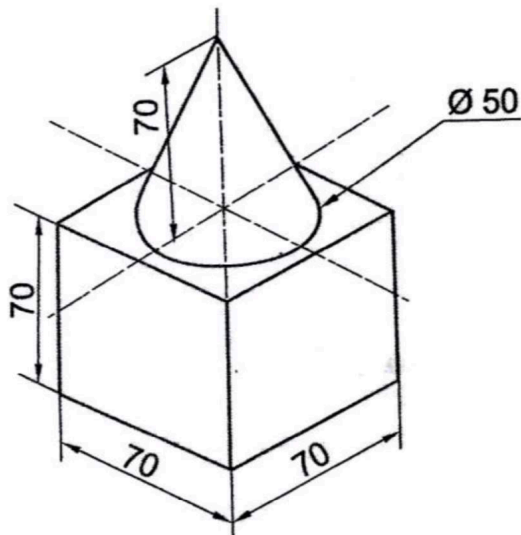
- | | |
|------------------|------------------|
| (A) internally | (B) externally |
| (C) tangentially | (D) concurrently |

8. Generally, the clearance provided in cotter hole is :

- (A) 5 to 10 mm (B) 10 to 20 mm
(C) 4 to 8 mm (D) 2 to 3 mm

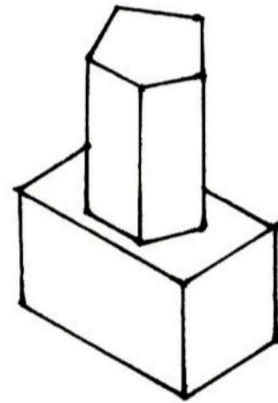
Q. 9 to Q. 14 select the correct option corresponding to the orientations of the given Isometric projection :

9.



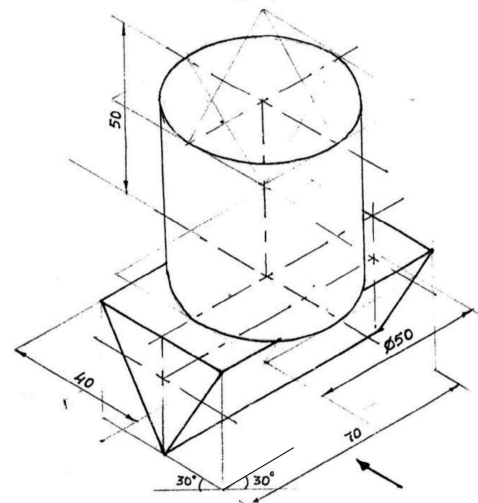
- (A) A cube is placed on a cone
(B) A cone is placed on a cube
(C) Common axis of both the solids are horizontal
(D) A cube is placed on a rectangular prism

10. The total number of rectangular surfaces in this combination of solids is :



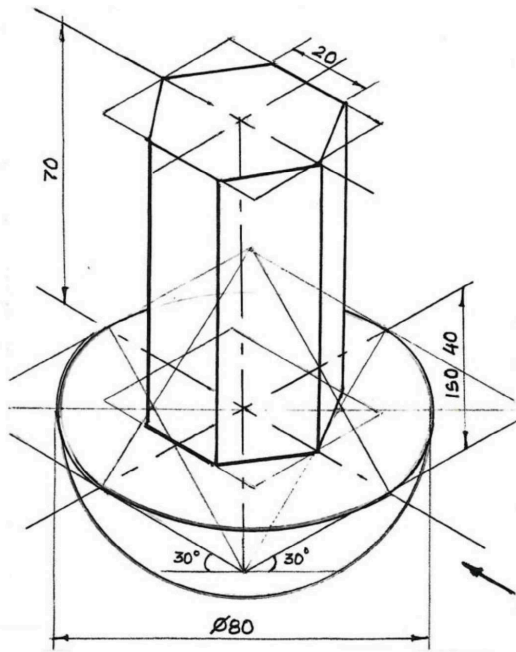
- (A) Six (B) Four
(C) Nine (D) Eleven

11.



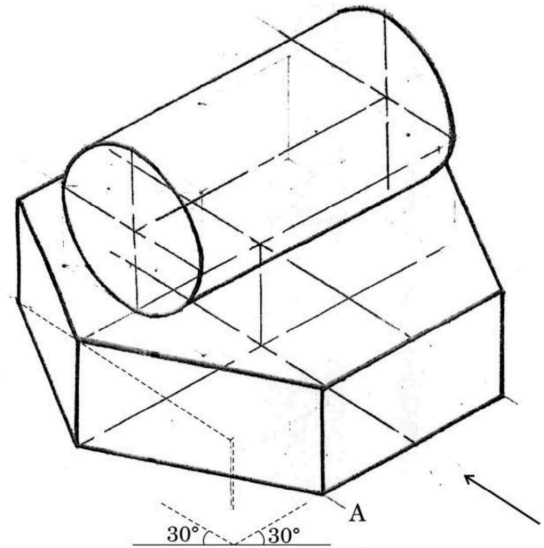
- (A) A cylinder is placed centrally on the top triangular face of a triangular prism.
(B) A cylinder is placed centrally on the top rectangular face of a triangular prism.
(C) A triangular prism is placed centrally on the top of a cylinder.
(D) The axis of both the solids are common.

12.



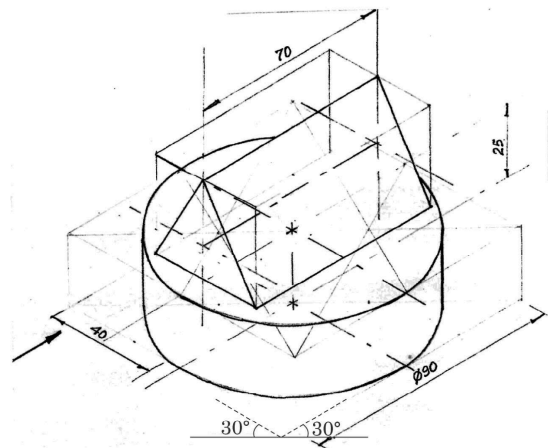
- | | |
|--|---|
| (A) A horizontal hexagonal prism is placed on top of a hemisphere, when two of its hexagonal ends perpendicular to VP. | (B) A horizontal hexagonal prism is placed on top of a hemisphere, when the hemisphere is resting on its circular face on HP. |
| (C) A vertical hexagonal prism is placed on top of a hemisphere, when the hemisphere is resting on its flat surface on HP. | (D) A vertical hexagonal prism is placed on top of a hemisphere, when the hemisphere is resting on its curved surface on HP. |

13. The name of the bottom solid is :



- | | |
|-----------------------|----------------------|
| (A) Pentagonal prism | (B) Hexagonal prism |
| (C) Pentagonal lamina | (D) Hexagonal lamina |

14.



- | | |
|--|--|
| (A) Bottom solid is vertical and the top solid is horizontal | (B) Bottom solid is horizontal and the top solid is vertical |
| (C) Both the solids are horizontal | (D) Both the solids are vertical |

15. Two statements are given – one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to the following question from the codes (a), (b), (c) and (d) as given below :

Assertion (A) : In Nuts and Bolts, Metric thread is usually provided.

Reason (R) : The thread angle of Metric thread is 60° .

- | | |
|--|---|
| (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of A. | (B) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of A. |
| (C) Assertion (A) is true, but Reason (R) is false. | (D) Assertion (A) is false and Reason (R) is also false. |

Q. 16 to Q. 20 – Read the paragraph given below and answer the following questions.

A school dropout boy joined as a helper in an auto spare parts shop. On his first day of work, the owner told him to segregate the small machine parts kept in a sack. The boy categorised each small part based on its common feature. He made one group of machine parts having body of cylindrical cross-section, head and tail. Later he found that all the parts in that group had different types of heads. These parts are known as rivets.

16. Select the most commonly used rivet head :

- | | |
|--------------------|--------------------|
| (A) Octagonal head | (B) Hexagonal head |
| (C) Snap head | (D) Square head |

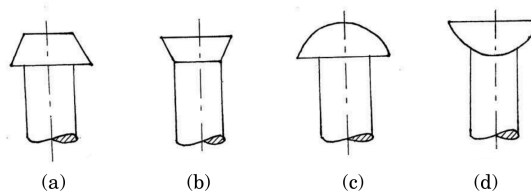
17. Select the standard thickness of head in a flat head rivet of diameter 'd'.

- | | |
|--------------|---------------|
| (A) d | (B) $0.25\ d$ |
| (C) $0.5\ d$ | (D) $0.8\ d$ |

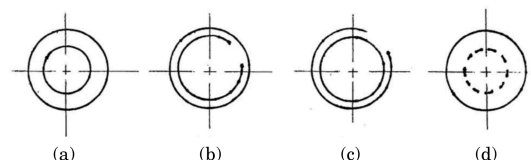
18. Name one of the practical applications of rivets :

- | | |
|---|-----------------------------------|
| (A) pressure cooker handle attached to its body | (B) trolley attached to a tractor |
| (C) matting of jewellery pieces | (D) hub attached to shafts |

19. Select the front view of a flat CSK head rivet :



20. Select the top view of vertical pan head rivet :



21(b). A vertical triangular pyramid of base edge 40 mm and 60 mm height is standing on its apex on HP. One of its triangular edges is perpendicular to VP. Draw its Isometric Projection. Give all the dimensions and indicate the direction of viewing.

OR

22. Draw to scale 1 : 1, the front view and side view of a **square headed bolt** (diameter 20 mm). Keep its axis parallel to both VP and HP. Give standard dimensions.

BODY (CL)
1 OFF
FRONT VIEW

BUSH (CL)
1 OFF
FRONT VIEW

TOP VIEW

SIDE VIEW

FIG. 1/FIG. 1. BUSH BEARING

NOTE: FIGURE NOT TO SCALE USE THE DIMENSIONS GIVEN.

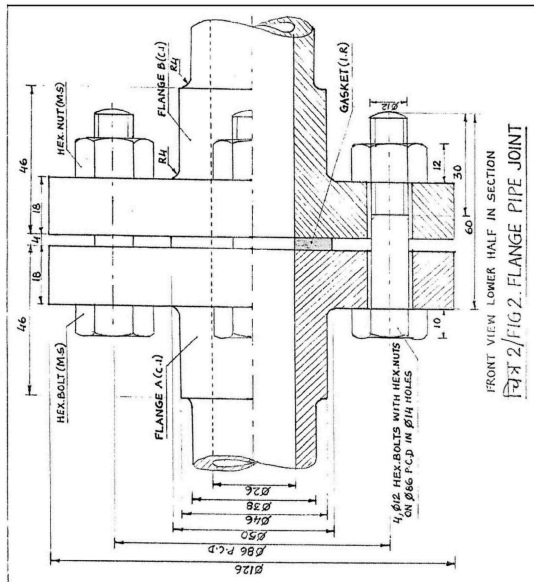
An enlarged drawing is provided in the drawing references at the end of this paper.

23(b). Right side view

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

OR

23. Figure 2 shows the assembly of **Flange Pipe Joint**. Dis-assemble 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 nut with respect to H.P. and V.P.



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

23(a)(i). FLANGE B

Front view upper half in section

23(a)(ii). FLANGE B

Right side view

23(b)(i). HEXAGONAL NUT

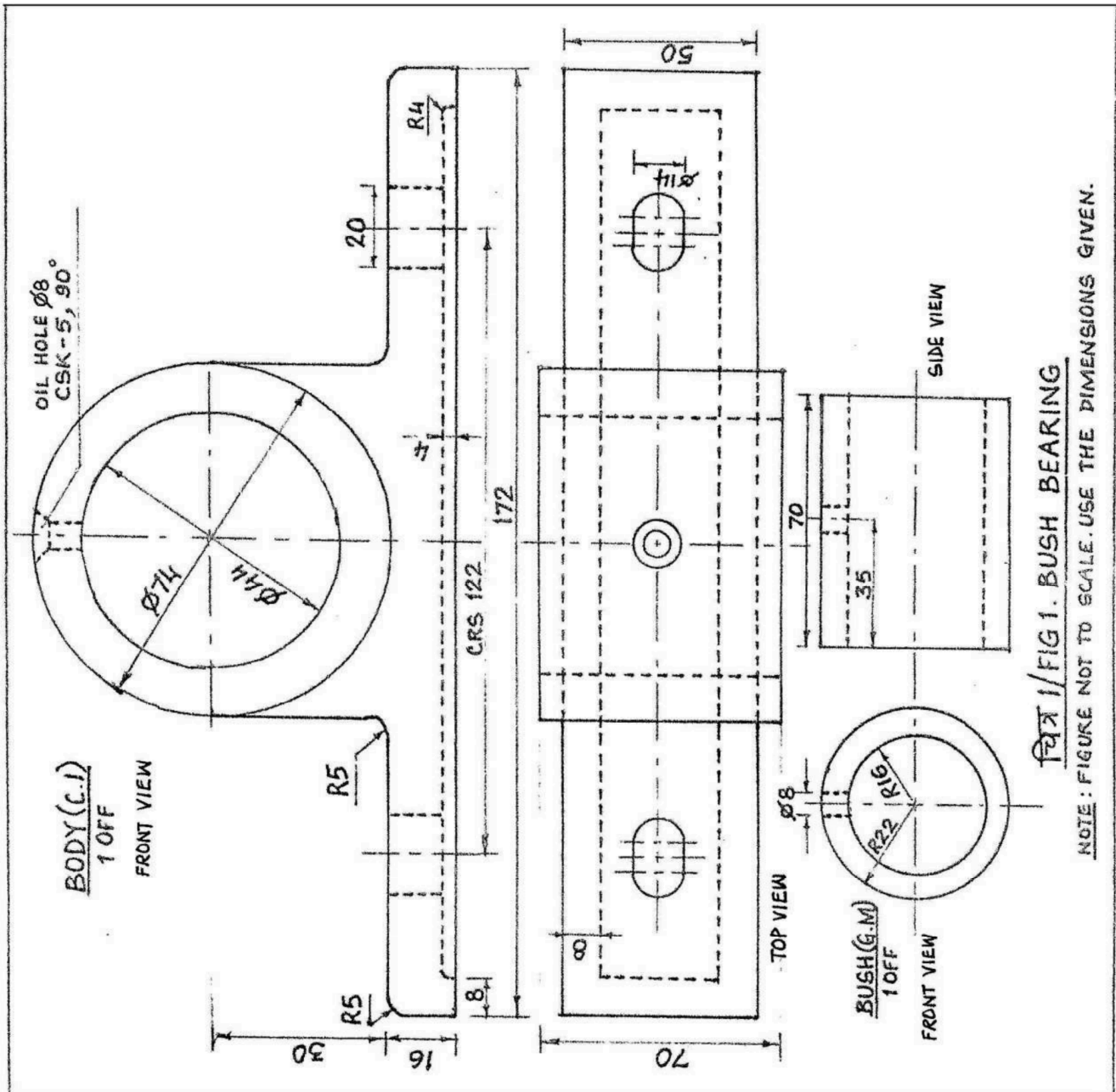
Front view

23(b)(ii). HEXAGONAL NUT

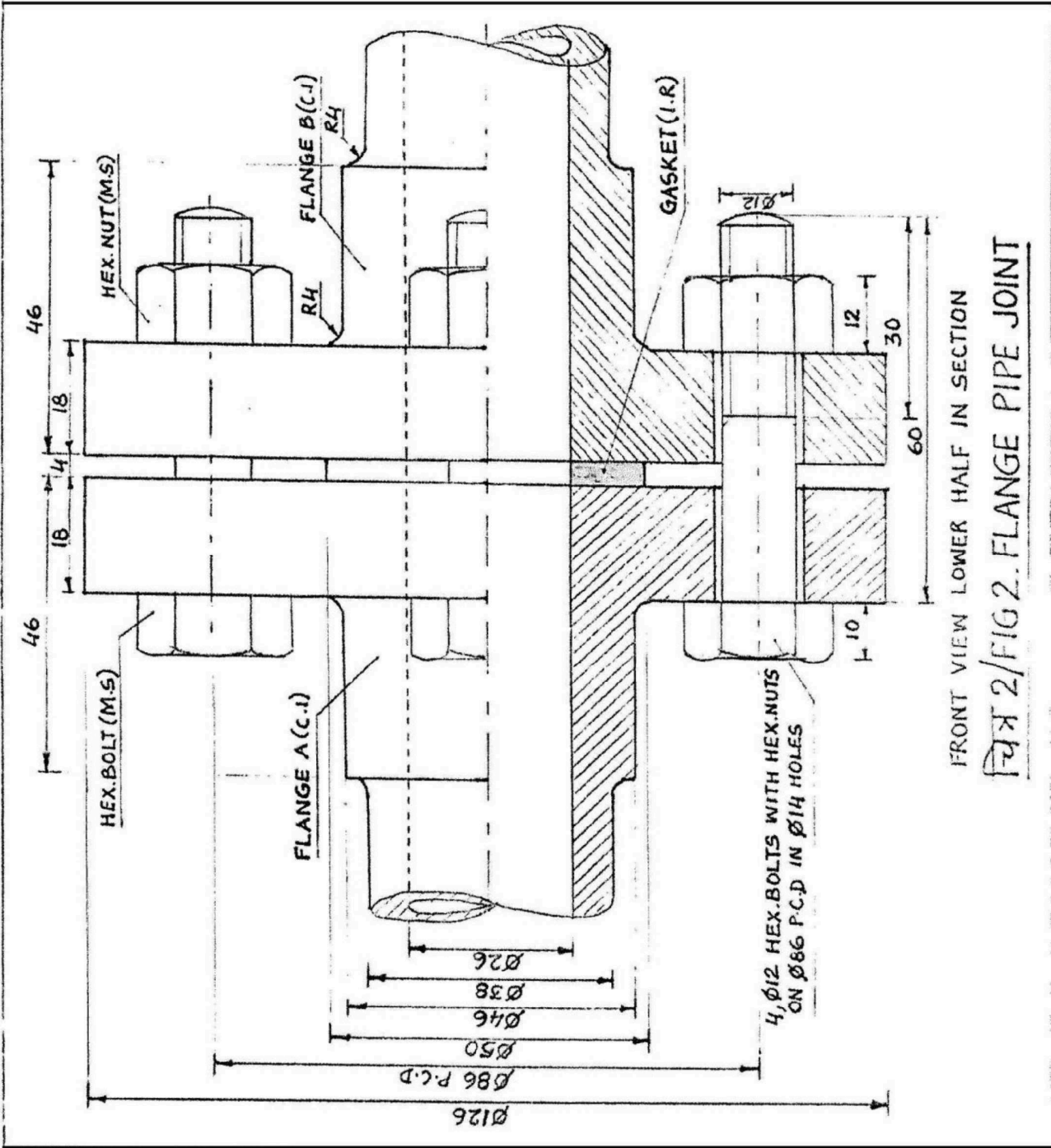
Right side view

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

Question 23 — Figure 1



Question 23 — alternative — Figure 2



- End of Question Paper -