

	INDIAN SCHOOL AL WADI AL KABIR		
Class: XI	Department: SCIENCE 2026 – 27 SUBJECT: ENGINEERING GRAPHICS	Date: 08.08.2026	
Worksheet No: 3 WITH ANSWERS	UNIT 3: ORTHOGRAPHIC PROJECTIONS OF REGULAR SOLIDS	Note: A4 FILE FORMAT	
NAME OF THE STUDENT		CLASS & SEC: XI C	ROLL NO.

MULTIPLE CHOICE QUESTIONS

1. What is the primary purpose of an orthographic projection?
 - A) To represent a 3D object in 2D views using parallel projectors
 - B) To create a perspective view showing depth
 - C) To enlarge the dimensions of a small object
 - D) To provide a single view that shows all three dimensions

2. In the first-angle projection system, what is the position of the object?
 - A) Below HP and behind VP
 - B) Above HP and behind VP
 - C) Above HP and in front of VP
 - D) Below HP and in front of VP

3. Which view is also commonly referred to as the 'Plan' in engineering drawing?
 - A) Front View
 - B) Top View
 - C) Side View
 - D) Isometric View

4. If a solid's axis is perpendicular to the HP, its true shape of the base will be visible in the:
 - A) Front View
 - B) Side View
 - C) Top View
 - D) Profile View

5. A vertical line in orthographic projection is defined as a line that is:
 - A) Parallel to the VP
 - B) Perpendicular to the HP

- C) Parallel to the HP
- D) Perpendicular to the VP

6. What is the angle between the projectors of the Top View and the Front View?

- A) 45°
- B) 60°
- C) 90°
- D) 180°

7. When a solid is resting on its base on the HP, its Front View will show its:

- A) True shape of the base
- B) Height and width
- C) Top surface only
- D) Side view only

8. Which scale is known as the 'Full Size Scale'?

- A) 1:2
- B) 2:1
- C) 1:1
- D) 5:1

9. A regular solid, by definition, has how many dimensions?

- A) One dimension
- B) Two dimensions
- C) Three dimensions
- D) Zero dimensions

10. If the axis of a pentagonal prism is parallel to both HP and VP, the Front View will be a:

- A) Pentagon
- B) Rectangle
- C) Triangle
- D) Line

11. In first-angle projection, the Top View is always drawn:

- A) Above the Front View
- B) To the left of the Front View
- C) Below the Front View
- D) To the right of the Front View

12. A frustum of a pyramid is formed by cutting the pyramid with a plane that is:

- A) Parallel to the base
- B) Perpendicular to the base
- C) Inclined to the base
- D) Parallel to the axis

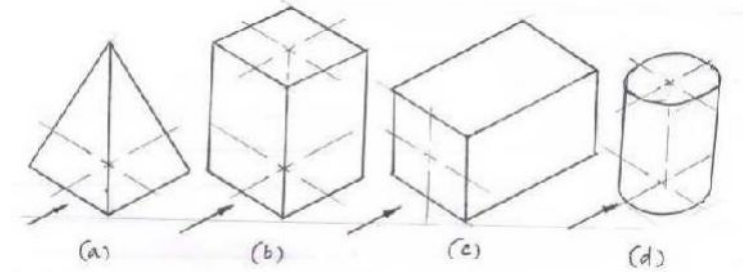
13. Which solid consists of two equal and parallel regular polygons joined by rectangular faces?

- A) Pyramid
- B) Cone
- C) Prism
- D) Sphere

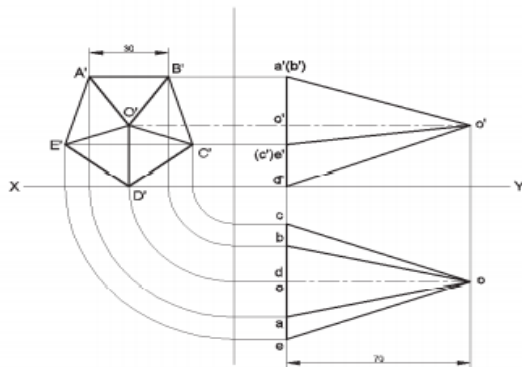
14. When the axis of a cone is perpendicular to the VP, its Front View will be a:

- A) Triangle
- B) Circle
- C) Semicircle
- D) Rectangle

15. Identify the horizontal solid from the following figures.



16. In this given figure, identify the position of the axis?



- A) Axis is perpendicular to HP
- B) Axis is perpendicular to VP
- C) Axis is parallel to both HP and VP
- D) Axis is perpendicular to HP and parallel to VP

17. Match the Solid Position (List I) with the Axis Orientation (List II):

Solid Position	Axis Orientation
1. Base on HP	i. Axis is perpendicular to VP
2. Base on VP	ii. Axis is parallel to both HP and VP
3. Resting on a rectangular face on HP	iii. Axis is perpendicular to HP
4. Axis parallel to XY line	iv. Axis is parallel to HP

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

Q18 to Q20 – Answer Read the following paragraph and answer the following questions.

Case Study: Mechanical Component Design

Arjun, a Grade 11 Engineering Graphics student, is designing a prototype for a mechanical coupling. The component is shaped like a Regular Hexagonal Prism.

In his initial technical drawing, Arjun positions the prism such that its axis is perpendicular to the Horizontal Plane (HP) and one of its rectangular base edges is parallel to the Vertical Plane (VP). He is using the First Angle Projection method for all his sketches.

18. Identify the shape that will be visible in the Top View (Plan) of this component.

19. Describe the shape and orientation of the Front View (Elevation). How many visible rectangular faces will be shown if the view is taken directly from the front?

20. If Arjun decides to change the orientation so the axis becomes parallel to both HP and VP, what will be the shape of the Side View (End View)?

DESCRIPTIVE TYPE QUESTIONS

1. A line AB 60 mm long has its end A, 5 mm from HP and 25 mm from VP. The line is inclined to HP at 30 degree and parallel to VP. Draw its front view and top view in first quadrant.

2. A circle of 50 mm diameter is having its surface making 45 degree with HP and perpendicular to VP. Draw its front view and top view.

3. Draw the front view and top view of a square pyramid of 40 mm base edges and 50 mm height with its base resting on HP and two of its base sides parallel to VP.

4.The frustum of a cone of base diameter = 50 mm and sectioned face diameter = 25 mm and vertical axis = 30 mm is resting on its base.Draw its front view and top view.

5. A regular pentagonal prism,base side 30 mm and height 50 mm is resting on one of its rectangular faces on HP and its pentagonal ends perpendicular to HP and VP.Draw its front view and top view.

6.The frustum of a sphere of 50 mm diameter and 40 mm vertical axis , is resting on HP with its sectioned face horizontal.Draw its front view and top view.

7.Draw the front view and top view of a regular pentagonal pyramid of base edges 25 mm and axis 45 mm long resting on a corner of its base on HP,with a base edge on top, parallel to HP.its axis is horizontal and parallel to VP.

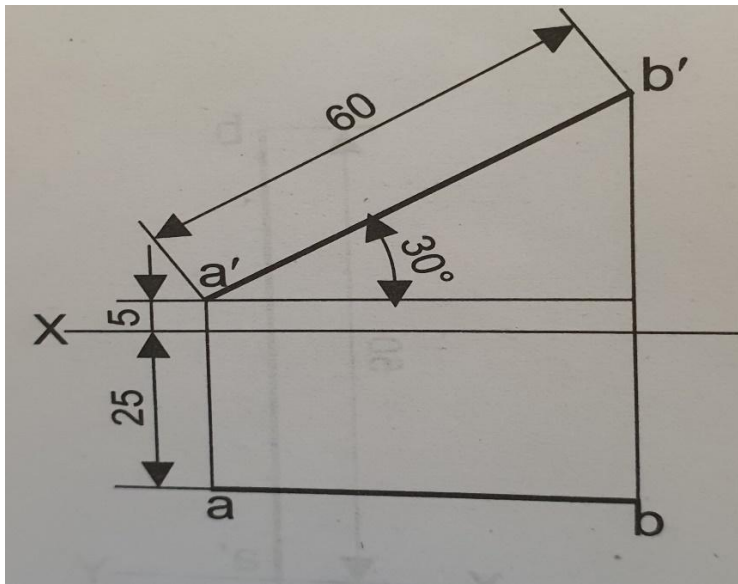
8.Draw the front view and top view of a hexagonal pyramid,of 25 mm base edges and 50 mm vertical axis, standing on the HP on its base, with two edges of its base parallel to the VP.

ANSWER KEY – MULTIPLE CHOICE QUESTIONS	
1	A) To represent a 3D object in 2D views using parallel projectors
2	C) Above HP and in front of VP
3	B) Top View
4	C) Top View
5	B) Perpendicular to the HP
6	D) 180° (Projectors are aligned vertically; the views themselves are separated by the XY line).
7	B) Height and width
8	C) 1:1
9	C) Three dimensions
10	B) Rectangle
11	C) Below the Front View
12	A) Parallel to the base
13	C) Prism
14	B) Circle
15	C)
16	C) Axis is parallel to both HP and VP
17	B) 1-iii, 2-i, 3-iv, 4-ii
18	Hexagon. (Since the component is a pentagonal prism with axis perpendicular to HP).

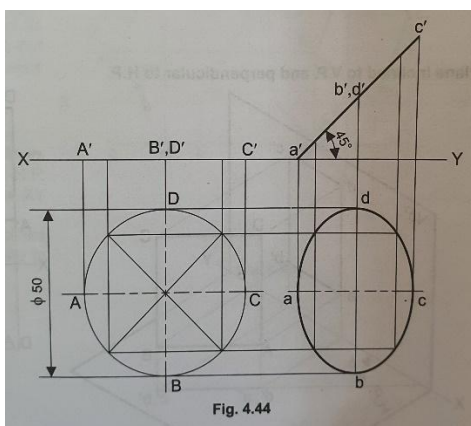
19	Rectangle. If viewed directly from the front, two or three rectangular faces may be visible depending on the orientation of the base edges (usually two if one edge is parallel to VP).
20	Hexagon. When the axis is parallel to both HP and VP, the true shape of the base is seen in the Side View (Profile Plane).

ANSWERS FOR DESCRIPTIVE TYPE QUESTIONS

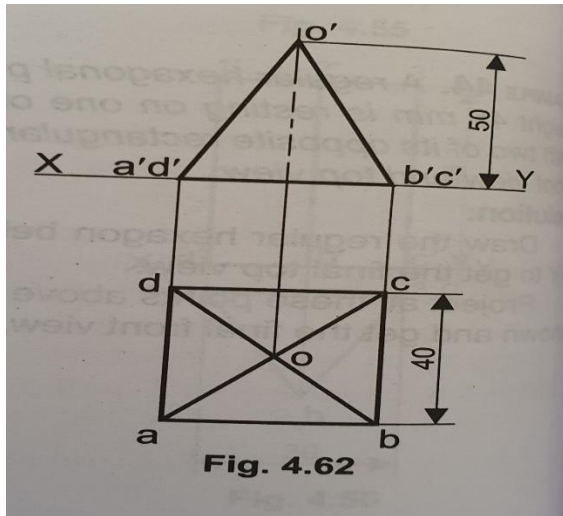
Q.1



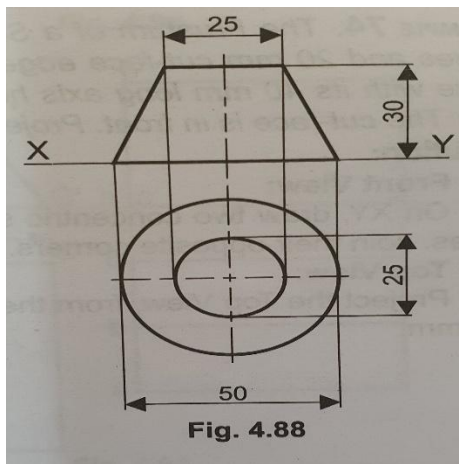
Q.2



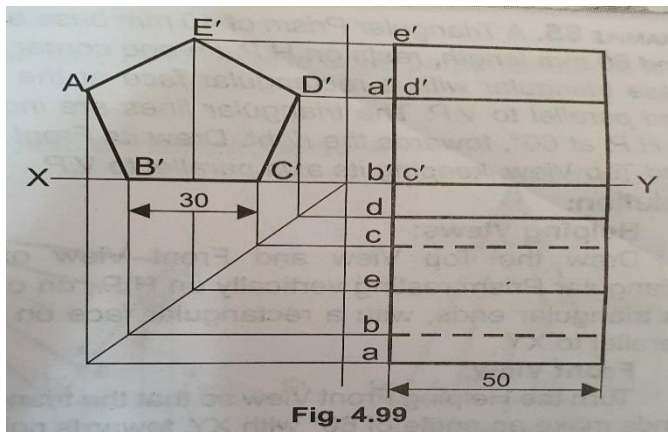
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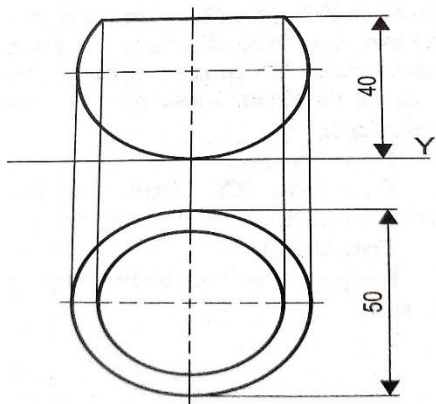
Q.4



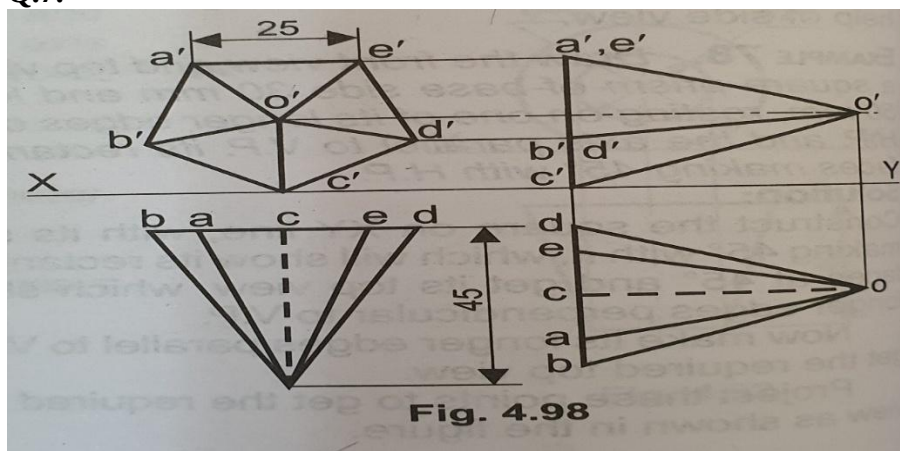
Q.5.



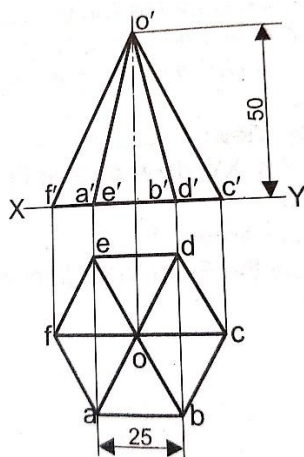
Q.6.



Q.7.



Q.8



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