

DIRECTORATE OF EDUCATION, GNCT OF DELHI
MID TERM EXAMINATION PRACTICE PAPER
CLASS XI
SESSION - 2026-27
ENGINEERING GRAPHICS (046)

Time allowed: 3 hours

Maximum Marks: 70

General Instructions:

- I. Question paper contains three sections Section-A, Section-B & Section-C respectively.
- II. All questions are compulsory.
- III. Use both sides of the drawing sheet, if necessary.
- IV. All dimensions are in millimetres.
- V. Missing and mismatching dimensions, if any, may be suitably assumed.
- VI. Follow the SP: 46 – 2003 revised codes. (with first angle method of projection)

SECTION – A

Q. 1 to Q. 14: Answer the following Multiple-Choice Questions. Print the correct choice on your drawing sheet.

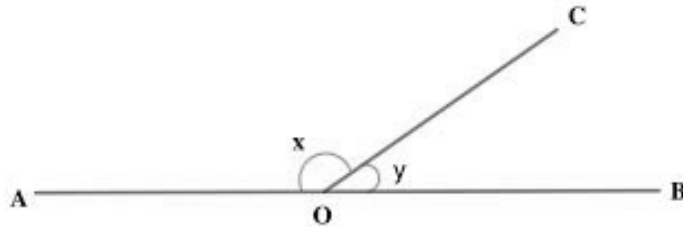
14x1=14

1. Which instrument replaces the traditional T-square and set squares?
 - a) Compass
 - b) Divider
 - c) Mini Drafter
 - d) Protractor
2. The circle that touches all sides of a regular polygon is known as:
 - a) Concentric circle
 - b) Inscribing circle
 - c) Tangent circle
 - d) Circumscribing circle

3. Which statement best describes a centre line?

- a) A thick continuous line representing visible boundaries.
- b) A thin non-continuous line representing the centre of a feature.
- c) A thin continuous line used for dimensions.
- d) A freehand line used for short breaks.

4. Choose the **correct** statement regarding the angles shown in given image:

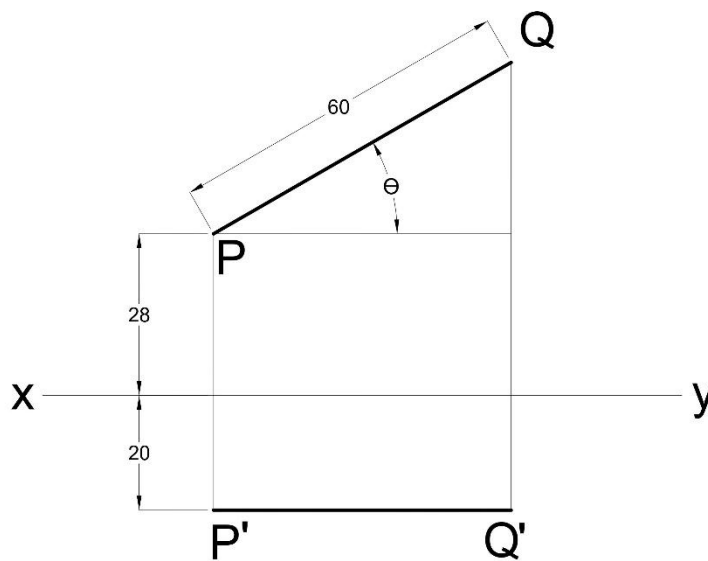


- a) angle "x" is the supplementary angle of angle "y".
 - b) angle "x" is the complementary angle of angle "y".
 - c) $x + y = 175^\circ$
 - d) angle "x" is the reflex angle of angle "y".
5. To study the spectrum of light in the Physics Labs, students were provided a solid made of glass as shown in the image below. The solid is a:

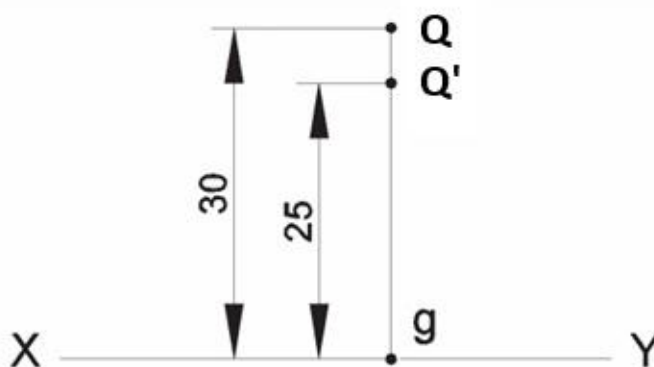


- a) Square Prism
 - b) Rectangular Prism
 - c) Conical Prism
 - d) Equilateral Triangular Prism
6. Which of the following solid has only a curved surface?
- a) Hemisphere
 - b) Cylinder
 - c) Sphere
 - d) Cone

7. Choose the **correct** option for the orthographic projection of a line "PQ" drawn using first angle projection method:



- a) The line 'PQ' is parallel to H.P.
 - b) The line 'PQ' is inclined at an angle with H.P.
 - c) The line 'PQ' is inclined at an angle with V.P.
 - d) The line 'PQ' is perpendicular to V.P.
8. Choose the **correct** option for the given orthographic projection of a point 'Q':



- a) Point is placed in First quadrant.
- b) Point is placed in Second quadrant.
- c) Point is placed in Third quadrant.
- d) Point is placed in Fourth quadrant.

9. Identify the **correct** statements regarding Quadrilateral:

- A. A quadrilateral can have four obtuse angles.
- B. A quadrilateral can have four right angles.
- C. If all sides of a quadrilateral are equal, then it must be a square.
- D. A rectangle is a quadrilateral with opposite sides equal and all angles equal.
- E. A quadrilateral cannot be divided into two triangles.

Choose the **correct** answer from the options given below:

- a) B & D only
- b) A & E only
- c) C & D only
- d) B & C only

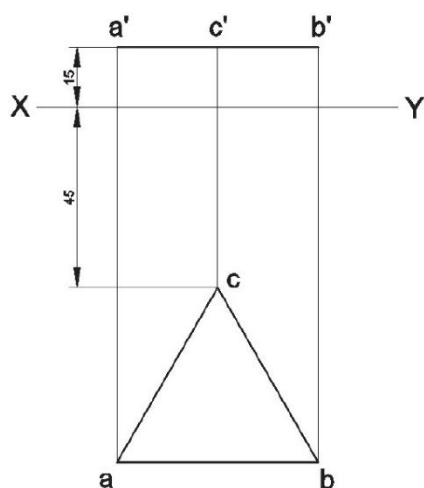
10. Identify the **correct** statements for the tetrahedron:

- A. A tetrahedron has eight vertices.
- B. A tetrahedron has two pairs of parallel faces.
- C. A tetrahedron is a solid bounded by four triangular faces.
- D. All edges of a regular tetrahedron are equal in length.
- E. A tetrahedron has the same number of faces as a cube.

Choose the **correct** answer from the options given below:

- a) A & C only
- b) B & E only
- c) C & D only
- d) B & D only

11. Identify the **correct** statements for the given first angle projection:



- A. The triangular lamina 'abc' is parallel to HP.
- B. The side 'ab' is parallel to both HP and VP.
- C. In the front view, the sides 'ac' and 'cb' are visible and the side 'ab' is hidden.
- D. The triangle 'abc' is placed 45 mm above HP.
- E. The triangular lamina 'abc' is perpendicular to HP.

Choose the **correct** answer from the options given below:

- a) A & B only
- b) D & E only
- c) A & C only
- d) B & E only

12. Match **Column-I** with **Column-II**:

Column- I (Types of angles)		Column- II (Definition)	
1	Straight Angle	(A)	Measures between 180° & 360°
2	Complete Angle	(B)	Angles having equal measure
3	Reflex Angle	(C)	Measures exactly 360°
4	Congruent Angles	(D)	Measures exactly 180°

Choose the **correct** answer from the options given below:

- a) 1-(A), 2-(B), 3-(C), 4-(D)
- b) 1-(B), 2-(D), 3-(A), 4-(C)
- c) 1-(D), 2-(C), 3-(A), 4-(B)
- d) 1-(C), 2-(A), 3-(D), 4-(B)

13. Match **Column-I** with **Column-II**:

Column- I (Name of Solid)		Column- II (Number of Vertices)	
1	Pentagonal Prism	(A)	Seven
2	Triangular Pyramid	(B)	Eight
3	Square Prism	(C)	Four
4	Hexagonal Pyramid	(D)	Ten

Choose the **correct** answer from the options given below:

- a) 1-(B), 2-(D), 3-(A), 4-(C)
- b) 1-(D), 2-(C), 3-(B), 4-(A)
- c) 1-(B), 2-(C), 3-(D), 4-(A)
- d) 1-(D), 2-(C), 3-(A), 4-(B)

14. Match **Column-I** with **Column-II**:

Column- I (Type of Orthographic projection)		Column- II (Object Position)	
1	First Angle Projection	(A)	Above HP and behind of the VP.
2	Second Angle Projection	(B)	Above HP and in front of the VP.
3	Third Angle Projection	(C)	Below HP and in front of the VP.
4	Fourth Angle Projection	(D)	Below HP and behind the VP.

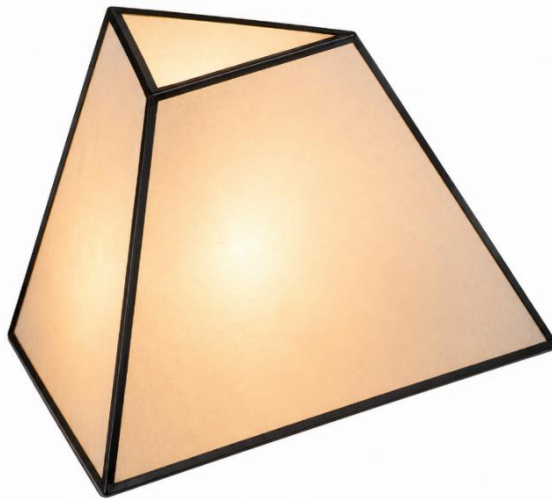
Choose the **correct** answer from the options given below:

- a) 1-(B), 2-(D), 3-(C), 4-(A)
- b) 1-(A), 2-(C), 3-(D), 4-(B)
- c) 1-(C), 2-(A), 3-(B), 4-(D)
- d) 1-(B), 2-(A), 3-(D), 4-(C)

SECTION – B

Q. 15 to Q. 18: Read the following paragraph and answer the questions given below:

4x1 = 4



A design student is creating a decorative glass lampshade for an exhibition. The lampshade is shaped like a frustum of a triangular pyramid, obtained by cutting the top of a vertical triangular pyramid with a plane parallel to its base. This gives the solid two parallel triangular faces: a smaller top face and a larger bottom face. The side faces are trapezium shaped. The student chooses this shape because it provides stability, an attractive appearance, and allows light to spread evenly. Understanding the geometry of the frustum helps the student calculate its surface area and material requirements accurately.

15. In its top view, we have:

- a) Two concentric triangles
- b) One triangle
- c) Two trapeziums
- d) Two non-concentric triangles

16. The axial height of the solid shown above is:

- a) The height of the original triangular pyramid
- b) More than the original triangular pyramid
- c) The height of the lower portion of the truncated original triangular pyramid
- d) The height of the upper portion of the truncated original triangular pyramid

17. How many faces does a frustum of a triangular pyramid have?

- a) Four
- b) Five
- c) Six
- d) Eight

18. Why did the student choose this shape for the lampshade?

- a) It has no edges.
- b) It allows light to spread evenly and provides stability.
- c) It is a two-dimensional figure.
- d) It requires no material to construct.

Q. 19 to Q. 22: Read the following paragraph and answer the questions given below: 4x1=4

Riya, a Class XI student, was preparing an engineering drawing assignment. She collected the necessary drawing instruments, including a drawing board, mini drafter, compass, divider, protractor, set squares, and pencils of different grades. She fixed the drawing sheet on the board and used the mini drafter to draw accurate horizontal and vertical lines. The compass helped her construct circles and arcs, while the divider was used to transfer measurements. The protractor and set squares assisted in drawing angles and inclined lines. By using the correct tools properly, Riya completed her drawing neatly, accurately, and within the given time.

19. Which of the following is NOT an Engineering Drawing instrument?

- a) Mini Drafter
- b) Compass
- c) Divider
- d) Calculator

20. A divider is mainly used for:

- a) Drawing circles
- b) Measuring angles
- c) Transferring measurements
- d) Erasing lines

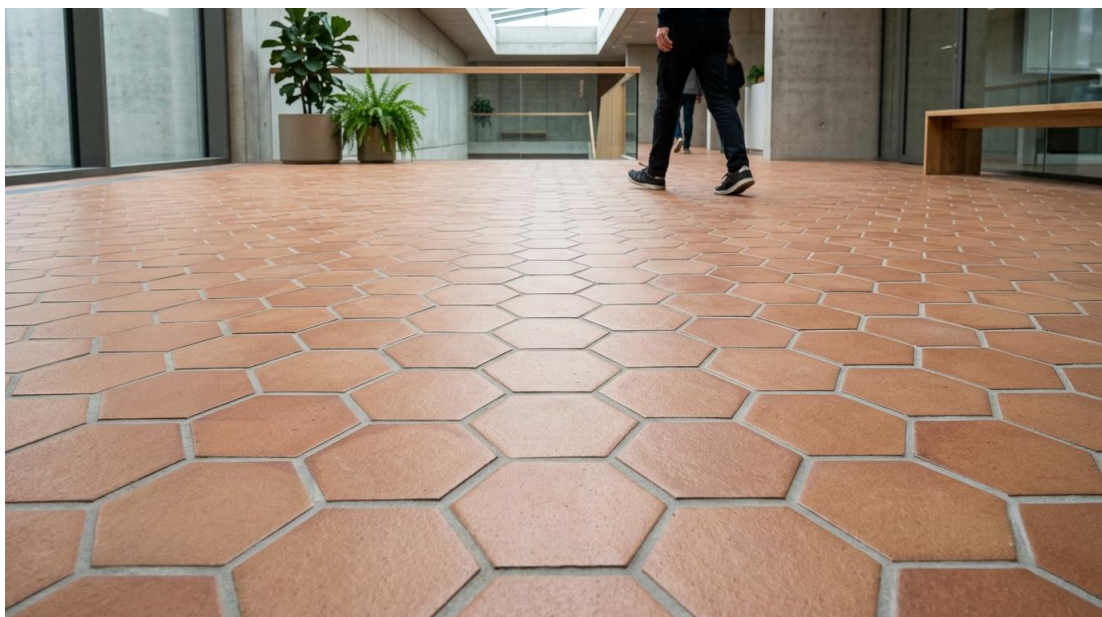
21. The drawing sheet is fixed on:

- a) Drawing Board
- b) Compass
- c) Divider
- d) Set Square

22. The most suitable pencil grade for drawing object lines/visible edges is:

- a) 4H
- b) 2H
- c) 2B
- d) HB

23. An office corridor is paved with regular hexagonal floor tiles, as shown in the figure. Consider one such tile as a plane lamina of negligible thickness. The tile has a side length of 50 mm and is placed parallel to the Horizontal Plane (H.P.), with two of its opposite parallel sides parallel to the Vertical Plane (V.P.). Draw the front view and top view of the tile. Give dimensions. **12**



24. A Square prism shaped sound box of base edge 46 mm and height 72 mm is placed on a table (HP) on its square face (ignore its base support). Two of its base edges are equally inclined to wall (VP). Draw its front view and top view. Print the title and scale used. Draw projection symbol. Give important dimensions. 15



OR

- A cylindrical water tank is shown in the image below. The diameter of the circular face is 42 mm and axial length is 76 mm. The tank is placed such that, its axis is parallel to both floor (HP) and wall (VP). Draw its front view and top view (Ignore supports). Print the title and scale used. Draw projection symbol. Give important dimensions. 15



SECTION – C

25. Construct a triangle whose altitude is 58 mm and two base angles are 40° and 65° . Give dimensions. **6**

26. Circumscribe a circle around a square of side 40 mm. Give dimensions. **7**

OR

Inscribe a circle in a regular pentagon of side 46 mm. Give dimensions. **7**

27. A straight-line AB of 60 mm length is parallel to HP and perpendicular to VP. The line is 20 mm above HP and point “A” is 15 mm in front of VP and near to it. Draw the front view and top view of the line and give dimensions. **8**