DIRECTORATE OF EDUCATION, GNCT OF DELHI
PRACTICE QUESTION PAPER
XII – (2025-26)
ENGINEERING GRAPHICS (046)

Time Allowed: 3 hours *Maximum Marks: 70*

Note:

(i) Attempt all the questions.

(ii) Use both sides of the drawing sheet, if necessary.

(iii) All dimensions are in millimetres.

(iv) Missing and 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 23, hidden edges or lines are to be shown in views without section.

(vii) In question 24, no hidden edges or lines required.

SECTION – A

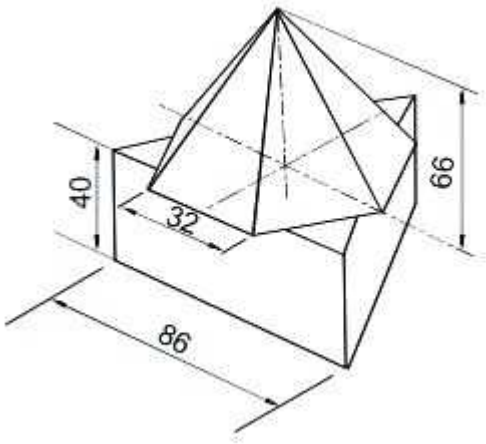
Q 1 to Q 14 – Answer the following multiple choice questions. Print the correct choice on your drawing sheet: 14 X 1 = 14

1. The angle between the true length and isometric length in an isometric scale is _____.
   a) 15^0.
   b) 90^0.
   c) 45^0.
   d) 30^0.
2. Which one among the following methods cannot produce 'One plane/pictorial' drawings?
   a) Oblique Projection
   b) Axonometric Projection

c) Orthographic Projection

d) Perspective Projection

3. How many triangular faces do this combination of solid have?



a) 5

b) 6

c) 7

d) 8

4. Which is the correct sequence in case of first angle method of projection?

a) Observer, Plane of projection, Object

b) Observer, Object, Plane of projection

c) Object, Plane of projection, Observer

d) Object, Observer, Plane of projection

5. Knuckle thread is a modified form of a _____ screw thread.

a) Square

b) BSW

c) Metric

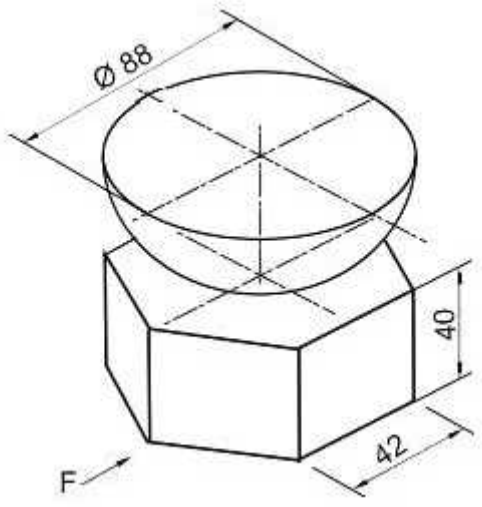
d) V – thread

6. CRS in Open Bearing stands for
    a) Center to center distance
    b) Edge to edge distance
    c) Corner to corner distance
    d) Top to bottom distance

7. In bush bearing, the sole plate of the bearing is recessed for
    a) Making it leak proof
    b) Joining the shafts
    c) Fitting of the bush
    d) Better stability on the surface

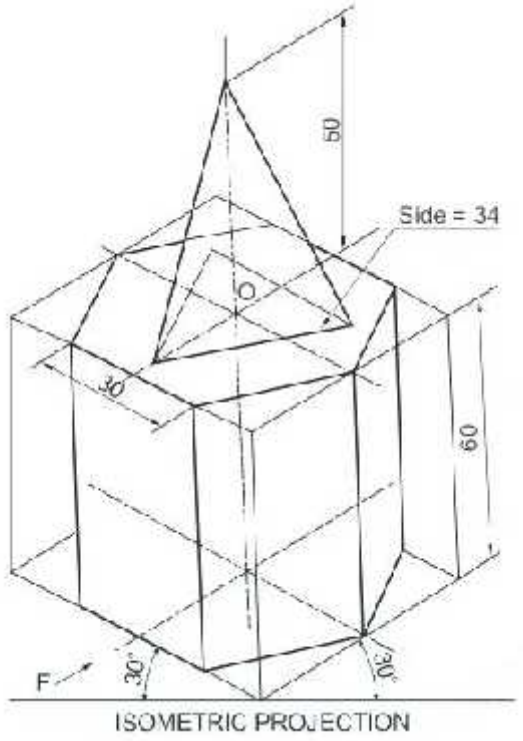
8. Which one among the following is called screw pair?
    a) Bolt and nut
    b) Shaft and key
    c) Gib and cotter
    d) Rivet and plate

9. Choose the correct option for the given combination of isometric projection:



a) The circular end is parallel to VP
b) The axis of combination is parallel to HP
c) The hexagonal ends are parallel to HP
d) The rectangular faces are parallel to VP

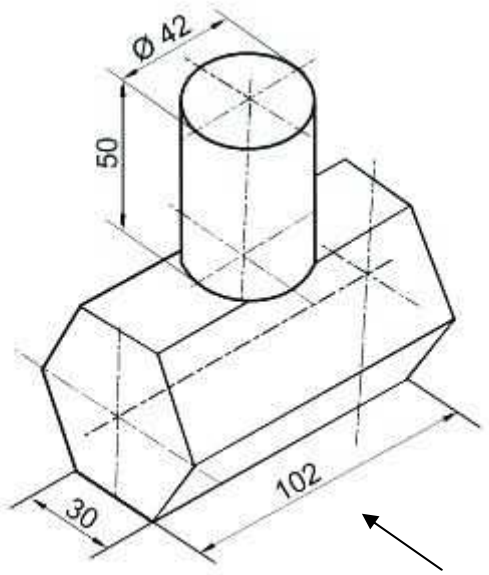
10. Choose the correct option for the given combination of isometric projection:



ISOMETRIC PROJECTION

a) The total height of the combination is 90 mm.
b) The total height of the combination is 84 mm.
c) The total height of the combination is 94 mm.
d) The total height of the combination is 110 mm.

11. Choose the correct option for the given combination of isometric projection:



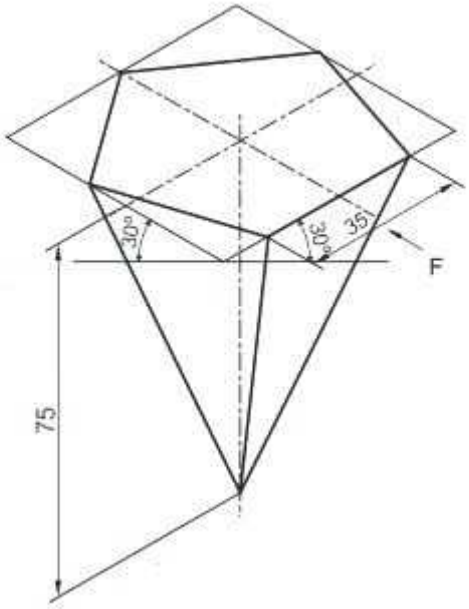
a) A hexagonal prism is resting on top of a cylinder. Axis of prism is parallel to VP and that of cylinder is perpendicular to VP.
b) A cylinder is resting on top of a hexagonal prism. Axis of prism is and that of cylinder is parallel to VP.
c) A hexagonal prism is resting on top of a cylinder. Axis of prism is parallel to VP and that of cylinder is perpendicular to VP.
d) A cylinder is resting on top of a hexagonal prism. Axis of prism is perpendicular to VP and that of disc is parallel to HP.

12. The end of the stud which is screwed in the body of casting with threaded hole is called:
    a) Nut end
    b) Metal end
    c) Close end
    d) Open end
13. The section area of the metal is represented by:
    a) Sketching
    b) Colouring

c) Hatching

d) Dots

14. Choose the correct option for the given isometric projection:



a) The axis is perpendicular to V.P. and one base edge is parallel to V.P.

b) The solid is an inverted pentagonal pyramid and axis is perpendicular to V.P.

c) One base edge of inverted pentagonal pyramid is parallel to V.P. and nearer to the observer.

d) The pentagonal prism is resting on its base with one base edge parallel to VP and nearer to it.

SECTION – B

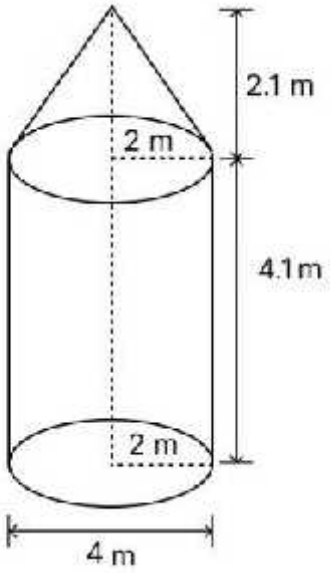
Q15 to Q 18 – Answer Read the following para and answer the following questions. 4 X 1 = 4

Students of class XII Engineering Graphics visited thermal power plant for academic tour. They also visited the store of that plant and seen spares for maintenance. They had seen so many nuts, bolts, studs, rivets, screws etc. Then the teacher explained everything about those parts.

15. Which category does the rivet belong to?
    a) Permanent fastener
    b) Permanent bearing
    c) Temporary fastener
    d) Temporary bearing
16. Stud is a
    a) Headless bolt
    b) Headless key
    c) Square headed bolt
    d) Hexagonal headed bolt
17. What is the chamfering diameter of the square headed bolt of d diameter?
    a) 0.8 d
    b) d
    c) 2 d
    d) 1.5 d + 3
18. What is the length of the metal end of a stud with 20mm diameter?
    a) 36mm
    b) 32mm
    c) 20mm
    d) 16mm

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

In a recent project, students of class XII created a tent for their school picnic. The mathematical drawing is given below. They know that Isometric projection is a powerful tool used in design and engineering to represent three-dimensional objects on a two-dimensional surface with accuracy. So by utilizing isometric drawings, they were able to create precise representations of the tent and presented to Principal and teachers, who were impressed by the clarity and detail provided.



19. The base of the tent in isometric projection will look like:
    a) A circle
    b) A rectangle
    c) An ellipse
    d) A rhombus
20. What is isometric projection primarily used for?
    a) Representing two-dimensional objects
    b) Representing three-dimensional objects
    c) Creating abstract art
    d) Creating animations
21. Why is isometric projection valuable in architectural design?
    a) It simplifies and helps in better visualization of complex parts of the project
    b) It provides two-dimensional multiple views
    c) It maintains accurate measurements of all dimensions
    d) It helps in cutting the cost by reducing the size
22. For drawing isometric projection of the project, the isometric dimensions will be
    a) Equal to true dimensions

b) More than true dimensions

c) Half of the true dimensions

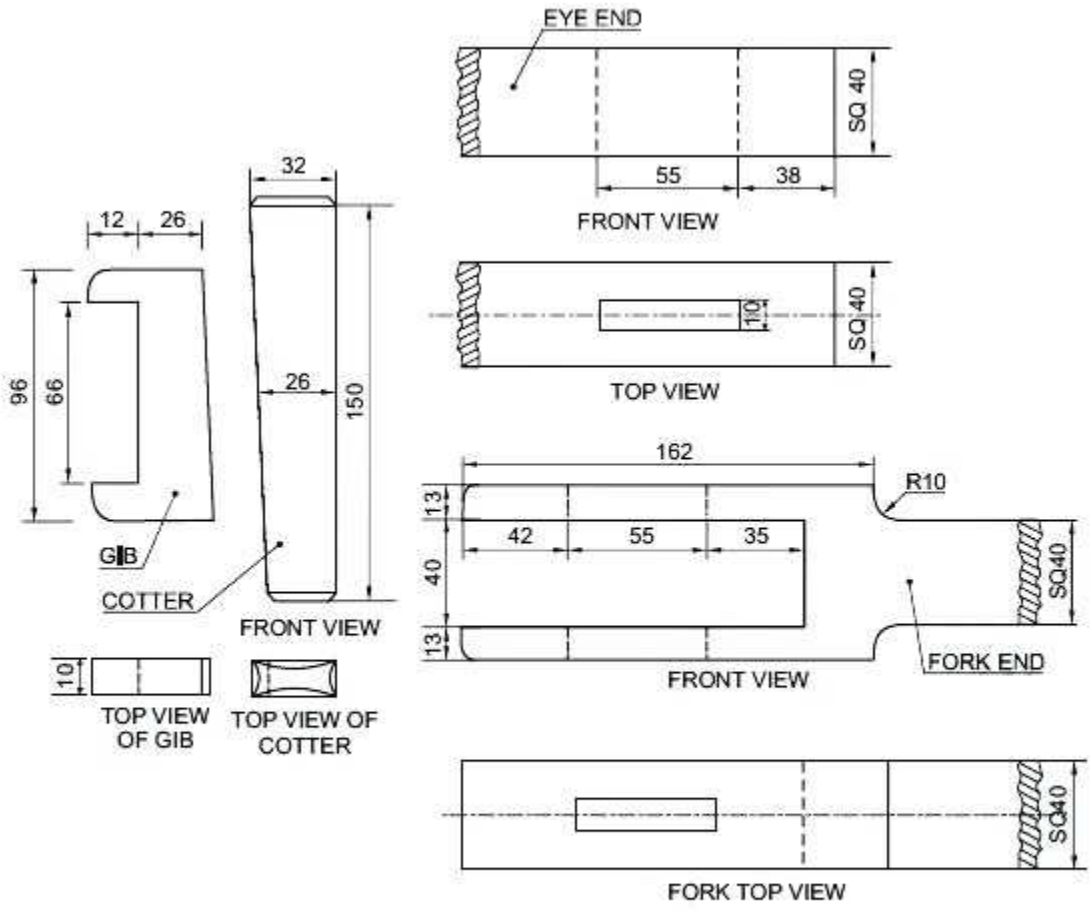
d) Equally foreshortened true dimensions

23. (A) Figure 1 shows the details parts of a 'Gib and Cotter Joint'. Assemble all the parts correctly and then draw, to scale 1:1, it's following views:

(a) Front View, lower half in section 13

(b) Right side View 8

Print the title and scale used. Draw projection symbol. Give six important dimensions. 6



DETAILS OF A GIB AND COTTER JOINT

NOTE: FIGURE NOT TO SCALE. FOLLOW DIMENSIONS ONLY.

Figure 1

OR

23. (B) Figure 2 shows the assembly of a 'Tie-Rod'. Disassemble the parts correctly and then draw, to scale 1:1, its following views of the following components. Keeping the same position with respect to H.P and V.P. as given:

(a) BODY

(i) Front View, lower half in section 9

(ii) Top View 6

(b) ROD B

(i) Front View. 4

(ii) Left side View. 2

Print the titles of both and scale used. Draw the projection symbol. Give six important dimensions. 6

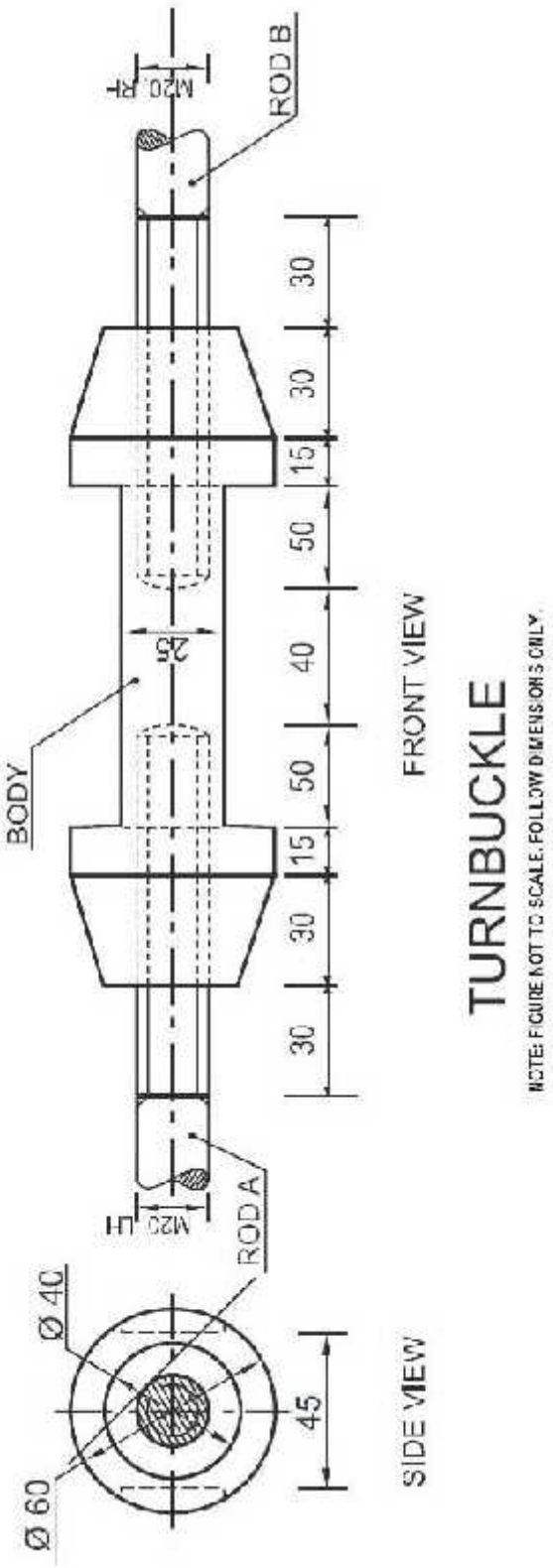

TURNBUCKLE
NOTE: FIGURE NOT TO SCALE. FOLLOW DIMENSIONS ONLY.
FRONT VIEW
SIDE VIEW
ROD B
ROD A
BODY
M20 RH
M20 LH
25
30
30
15
50
40
50
15
30
30
45
Ø 40
Ø 60

Figure 2

SECTION – C

24. (A) Construct an isometric scale. 4

24. (B) Draw the isometric projection of a hexagonal prism (base edge 30 mm, axial length 75mm) resting on its base on H.P. with its axis perpendicular to H.P. and parallel to V.P. Indicate the direction of viewing. Give all the dimensions. 9

25. (A) Draw to scale 1:1, the standard profile of the **Knuckle thread profile** with enlarged pitch of 40mm. Give standard dimensions. 8

OR

25. (B) Draw to scale 1:1, the front view and top view of a hexagonal headed bolt of M30. Take axis of the bolt as vertical. Give the standard dimensions. 8