COMMON PRE-BOARD EXAMINATION: 2022-23

Class-XII Subject: ENGINEERING GRAPHICS (046)

Max.Marks:70 Timings: 3 Hours

Date: 22/01/2023

General Instructions:

(i) Attempt all the questions.

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

(iii) All dimensions are in millimeters.

(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 no view of question 21, are hidden edges or lines required.

(vii) In question 23, hidden edges or lines are to 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 lines which are not parallel to the isometric axes are known as _____ 1

a) Non isometric lines b) Horizontal lines

c.) Vertical lines d) Isomeric lines

2. In Isometric projection the ratio of True length to Isometric length is 1

a) $\sqrt{2} : \sqrt{3}$

b) $\sqrt{3} : \sqrt{2}$

c) $1 : \sqrt{2}$

d) $1 : \sqrt{3}$

3. Riveting is done for joining: 1

a) Shafts together b) Plates together

c) Pipes together d) Rods together

4. The function of a washer is: 1

a) To fill the axial gap b) To provide cushion effects

c) To absorb shocks and vibrations d) To provide the bearing surface

5. In BSW thread D=_____ when P is given. 1

a) 0.96P b) 0.64P c) 0.866P d) 0.61 P

6. P.C.D. in flange pipe joint means 1

a) Pitch corner diameter b) Pitch counter distance

c) Pitch center distance d) Pitch circle diameter

7. The portion of the shaft lying within the bearing is called 1

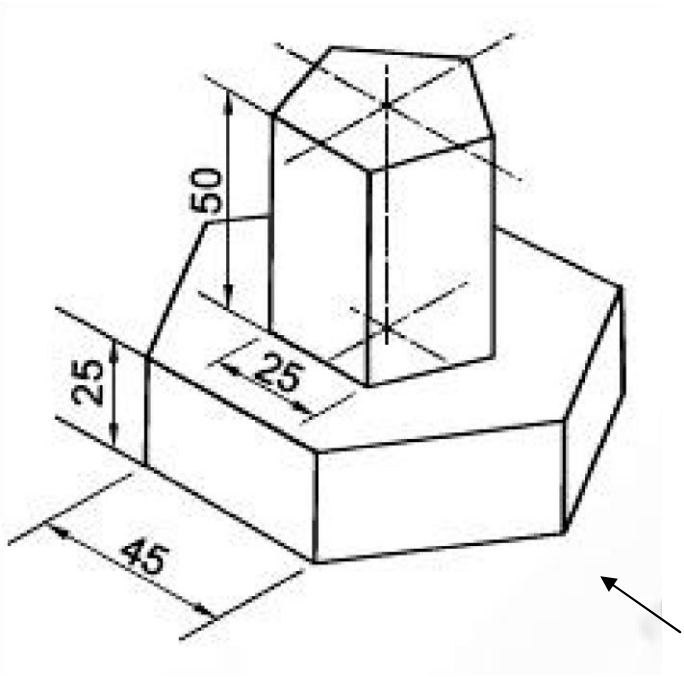
a) Bush b) Journal c) Body d) oil hole

8. Which type of thread is used in electric bulbs: 1

a) Metric thread b) BSW thread c) Knuckle thread d) Square thread

Q 9 to Q 14 – Select the correct option corresponding to the orientation of the given Isometric Projection:

9. *1*



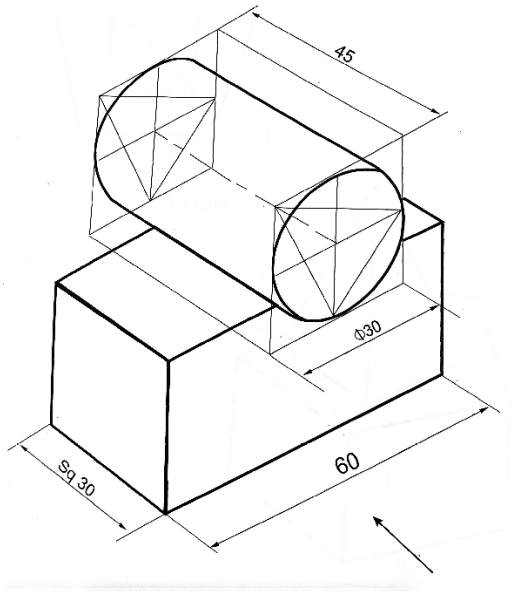
a) A pentagonal prism is resting on top of pentagonal disc. Axis of prism is parallel to VP and that of disc is perpendicular to VP.

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

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

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

10. *1*



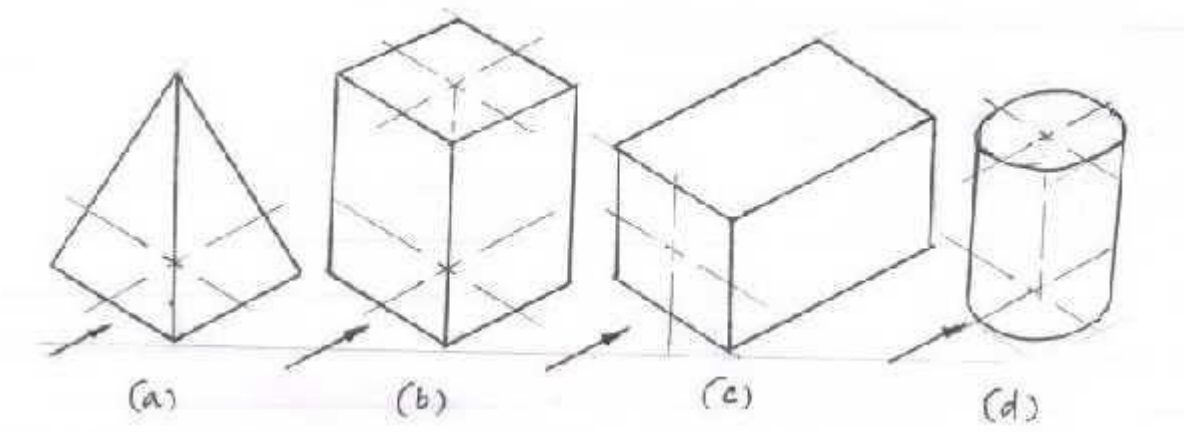
a) Square prism is vertical and cylinder is kept with its axis perpendicular to VP

b) Square prism is horizontal and cylinder is kept with its axis perpendicular to VP

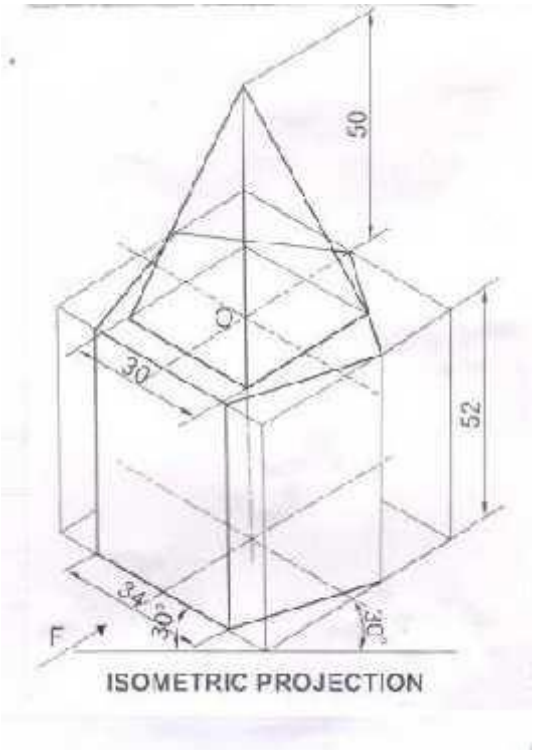
c) Square prism is horizontal and cylinder is kept with its axis parallel to VP

d) Square prism is vertical and cylinder is kept with its axis parallel to VP and HP

11. A horizontal prism *1*

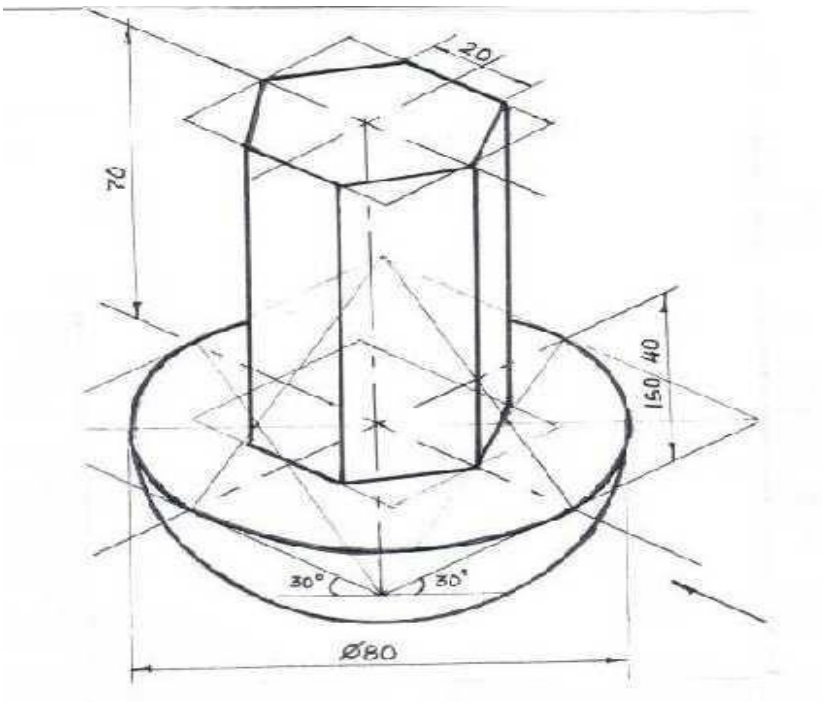


12. 1



a) The common axis is perpendicular to HP and parallel to VP.
b) The common axis is perpendicular to VP and parallel to HP.
c) The axis of the prism is parallel to HP and the axis of the pyramid is perpendicular to HP.
d) The axis of the prism is perpendicular to HP and the axis of the pyramid is parallel to HP.

13.



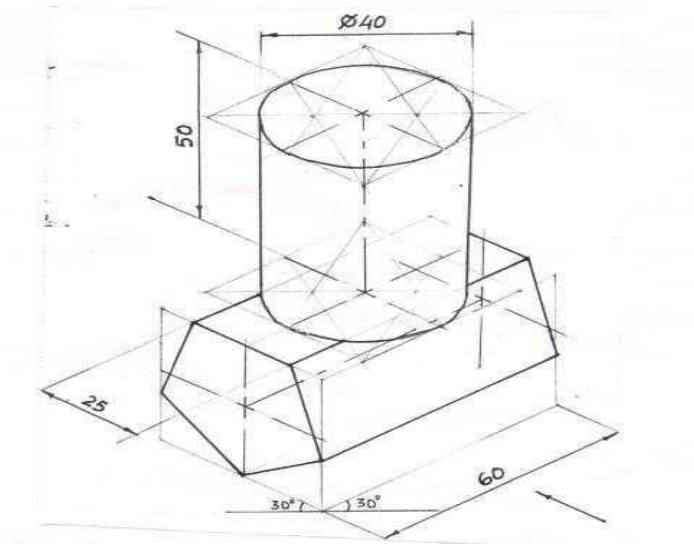
a) The common axis is perpendicular to HP and two of the base edges of the prism are perpendicular to VP

b) The common axis is perpendicular to VP and two of the base edges of the prism are perpendicular to HP

c) The common axis is perpendicular to HP and two of the base edges of the prism are parallel to VP

d) The common axis is perpendicular to VP and two of the base edges of the prism are parallel to VP.

14. *1*



a) A vertical cylinder of base diameter 40 mm is placed centrally on a hexagonal prism which is resting on HP with one of its long edges on it.

b) A vertical cylinder of base diameter 40 mm is placed centrally on a pentagonal prism which is resting on HP with one of its long edges on it.

c) A vertical cylinder of base diameter 40 mm is placed centrally on a pentagonal prism which is resting on HP with one of its rectangular faces on it.

d) A vertical cylinder of base diameter 40 mm is placed centrally on a hexagonal prism which is resting on HP with one of its rectangular faces on it.

– 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:

a) **Both A and R are true and R is the correct explanation of A.**

b) **Both A and R are true and R is not the correct explanation of A.**

c) **A is true but R is false.**

d) **A is false and R is also false.3**

15. **A**: A plain washer is a circular plate having a hole in its centre. 1

R: If the nominal diameter of the bolt on which the washer is used is D, then the inner diameter of the washer is given as 2D+6.

Q16 to Q 20 – Read the following paragraph and answer the following questions.

Rajesh is the best athlete of his school , he has a dream to win gold medal for his country Football match. One night he dreamt that he is running with the opening torch. Next morning he decides to make a model of the torch. He takes a wooden cylindrical rod of diameter 80mm and a height 450mm and sets a hollow steel hemisphere of outer diameter 200mm and inner diameter 190mm on top of this cylindrical rod.

16. The isometric projection of the cylindrical base of his model will be : 1

a) An equilateral triangle b) An isosceles triangle

c) A circle d) A ellipse

17. Total height of his model will be: 1

a) 550mm b) 650mm c) 440mm d) 280mm

18. In case he uses a square prism instead of the cylinder , what will be the height of his torch? 1

a) It remains same b) It becomes double

C) It will be less d) It becomes half

19. The orthographic projection of the front view and the side view of his model will be: 1

a) same in all dimensions

b) different in shape

c) Front view will be bigger than side view

d) Side view will be bigger than the front view

20. What will be the major diameter of the biggest ellipse if an isometric projection is drawn: 1

a) 200mm b)190mm c) 80mm d) isometric 200mm

SECTION B

21. (a) Construct an isometric scale. 5

(b) Draw the isometric projection of a pentagonal prism (base edge 25 mm, axial length 55mm) resting on its face with its axis parallel to H.P. and V.P. both. Indicate the direction of viewing. Give all the dimensions. 10

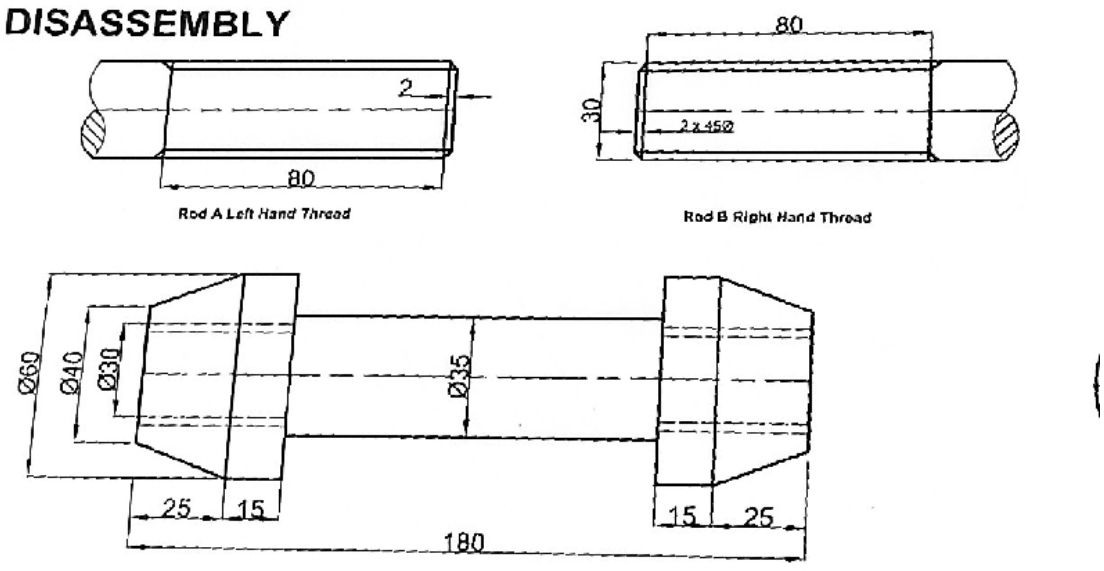
22. Draw to scale 1:1, the front view and top view of a square headed bolt across flat, the diameter is given as 24 mm. The axis of the bolt is vertical. Give the standard dimensions. 8

OR

Draw to scale 1:1, the standard profile of the **Metric thread profile (internal)** with the pitch = 50mm. Give standard dimensions. 8

23. Figure 1 shows the detailed parts of a **Turn Buckle**. 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) Top view 8
(c) Print the title and scale used. Draw projection symbol. Give 6 important dimensions 6



OR

Figure 2 shows the assembly of a 'Sleeve and Cotter Joint'. 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) SLEEVE

(i) Front View, lower half in section — 7

(ii) Right side View. — 4

(b) ROD B

(i) Front view bottom half in section. — 6

(ii) Left Side View. — 4

(c) Print the titles of both and scale used. Draw the projection symbol. Give 6 important dimensions. — 6