

**Maximum Marks: 35****Time Allowed: 90 Minutes****General Instructions:**

1. The Question Paper contains three sections A, B and C.
2. Section A has 25 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 6 questions. Attempt any 5 questions.
5. All questions carry equal marks.
6. There is no negative marking.

**SECTION A****This Section A has 25 Multiple Choice Questions. Attempt any 20 questions.**

- 1) Which is the included angle of a regular hexagon?
  - a)  $30^{\circ}$
  - b)  $60^{\circ}$
  - c)  $90^{\circ}$
  - d)  $120^{\circ}$
- 2) Name the projection with multiple views.
  - a) Perspective projection
  - b) Isometric projection
  - c) Orthographic projection
  - d) Oblique projection
- 3) Name the solid with apex.
  - a) Cone
  - b) Square prism
  - c) Triangular Prism
  - d) Sphere
- 4) Name the type of line which is used for dimensioning.
  - a) Small dash line
  - b) Chain line
  - c) Wavy line
  - d) Thin continuous line
- 5) 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
- 6) What is the thread angle of a metric thread?
  - a)  $40^{\circ}$
  - b)  $60^{\circ}$
  - c)  $80^{\circ}$
  - d)  $100^{\circ}$
- 7) The angle between the flanks of a BSW thread profile is?

- a)  $60^{\circ}$
  - b)  $90^{\circ}$
  - c)  $55^{\circ}$
  - d)  $45^{\circ}$
- 8) Usually the section lines are inclined with horizontal line at.
- a)  $45^{\circ}$
  - b)  $35^{\circ}$
  - c)  $25^{\circ}$
  - d)  $15^{\circ}$
- 9) Which one of these is a temporary fastening?
- a) Welding
  - b) Nut-Bolt
  - c) Riveting
  - d) Pasting
- 10) Which among these is used for power transmission?
- a) Square thread
  - b) BSW thread
  - c) Metric thread internal
  - d) Metric thread external

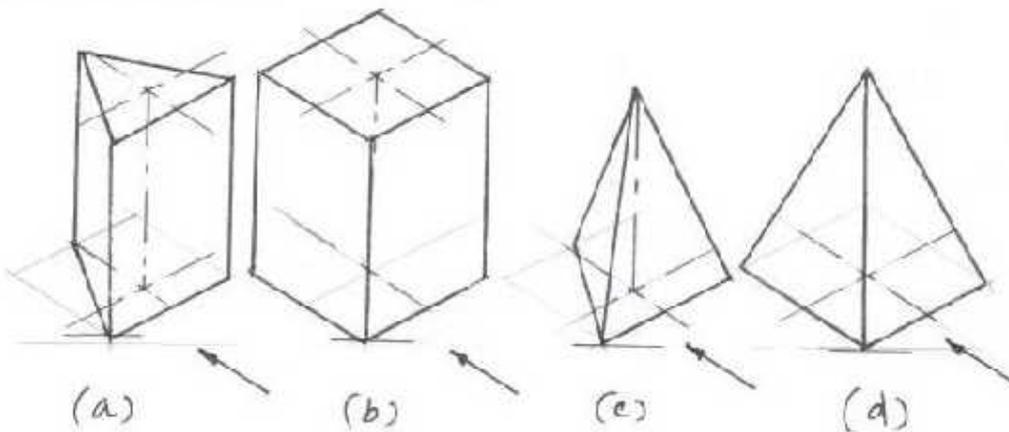
### **FILL IN THE BLANKS**

- 11) \_\_\_\_\_ is the projection used in engineering practices.
- a) Isometric projection
  - b) Oblique projection
  - c) Perspective projection
  - d) Inclined projection
- 12) \_\_\_\_\_ projection gives the true size of the object.
- a) Isometric
  - b) orthographic
  - c) Oblique
  - d) Perspective
- 13) The isometric length of 70 mm is \_\_\_\_\_.
- a) Equal to true 70 mm
  - b) Less than true 70 mm
  - c) More than true 70 mm
  - d) Equal to true 100 mm.
- 14) The angle between the main scale and isometric scale is \_\_\_\_\_.
- a)  $15^{\circ}$
  - b)  $30^{\circ}$
  - c)  $45^{\circ}$
  - d)  $90^{\circ}$
- 15) The shape of circle in isometric projection is \_\_\_\_\_.
- a) Cycloid
  - b) Circle
  - c) Parabola
  - d) Ellipse

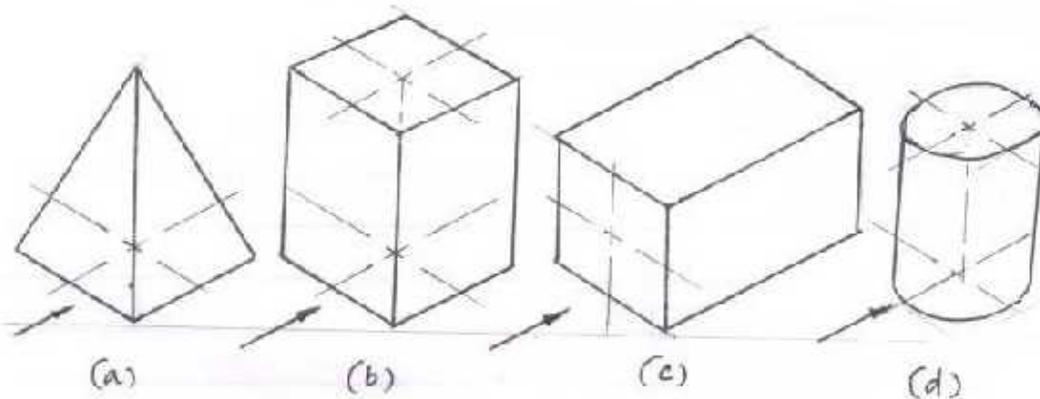
- 16) The angle of chamfer is usually \_\_\_\_\_ with the base of a hexagonal nut.
- $10^{\circ}$
  - $20^{\circ}$
  - $30^{\circ}$
  - $40^{\circ}$
- 17) The full form of B. S. W. thread is \_\_\_\_\_.
- Bureau of Standard Width
  - Bureau of Standard Whitworth
  - British Standard Width
  - British Standard Whitworth
- 18) Knuckle thread is a modified form of a \_\_\_\_\_ screw thread.
- Square
  - BSW
  - Metric
  - V – thread

**CHOOSE THE MOST APPROPRIATE FIGURE**

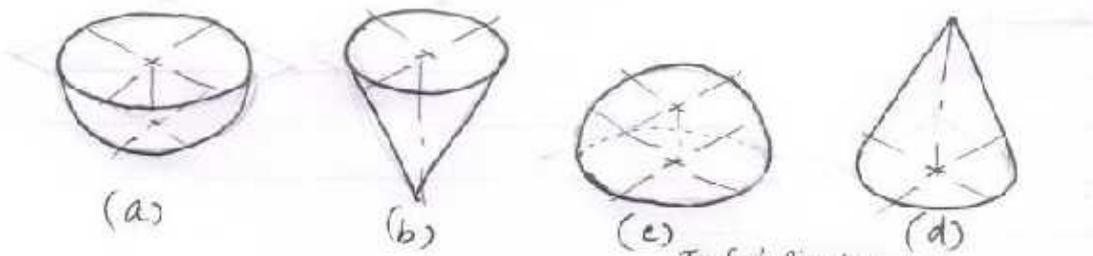
- 19) A vertical square prism with its axis perpendicular to HP and parallel to VP



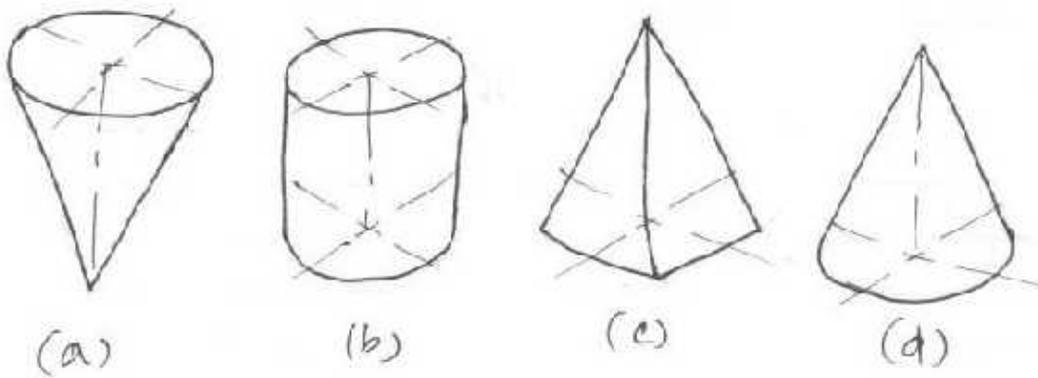
- 20) A horizontal solid



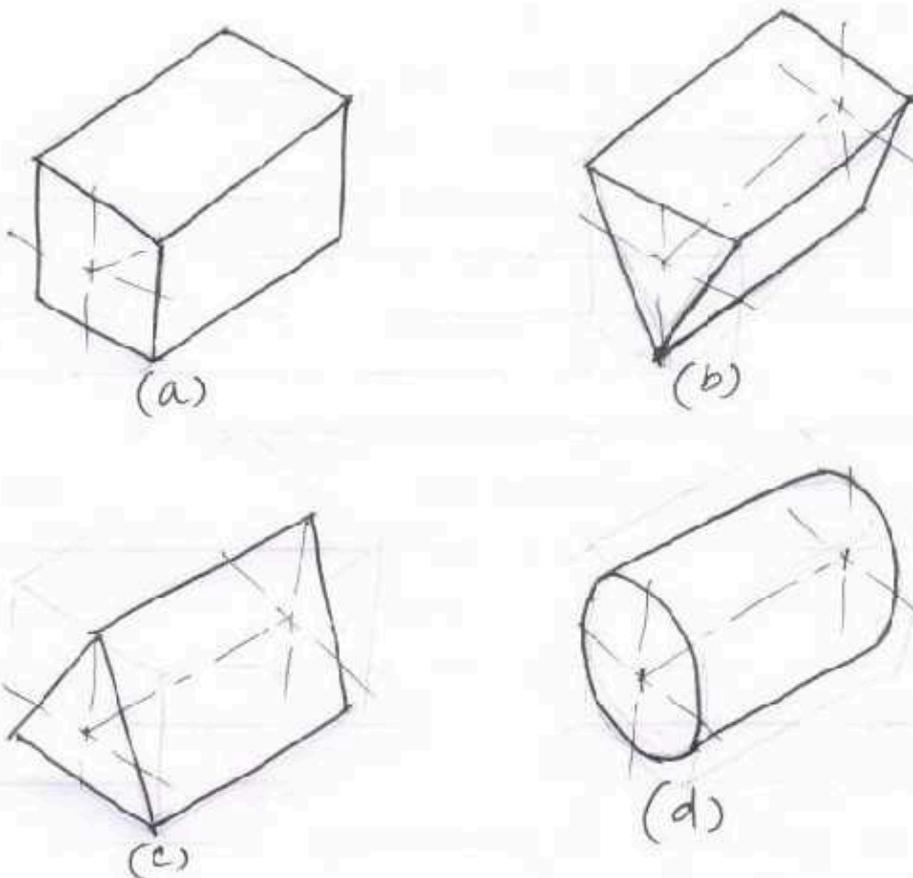
21) A hemisphere resting on HP with its circular face on it



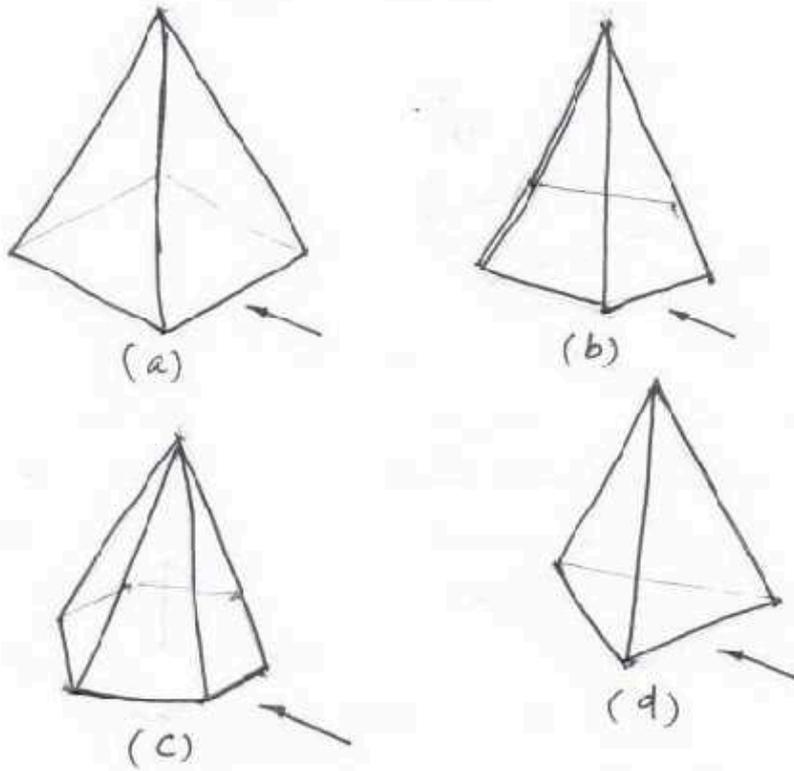
22) An inverted solid



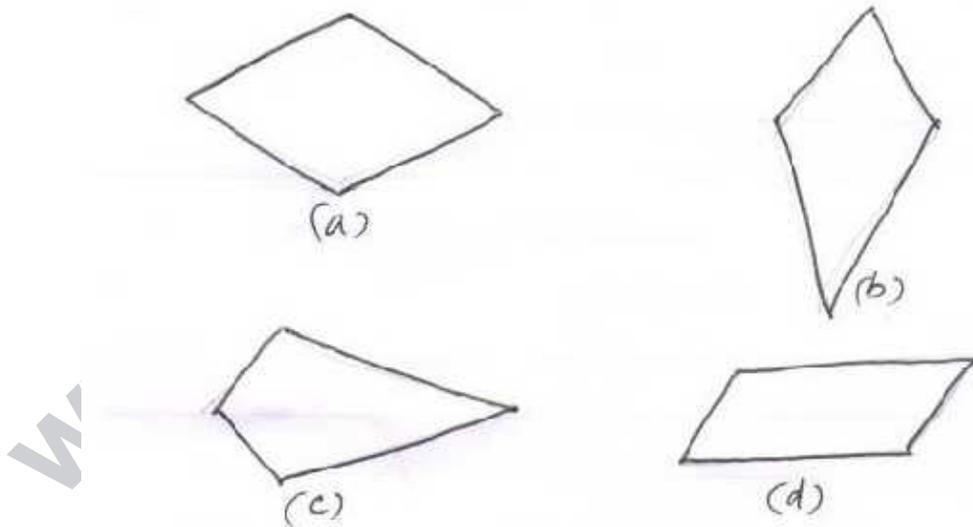
23) A solid resting on one of its long edges



24) A vertical hexagonal pyramid



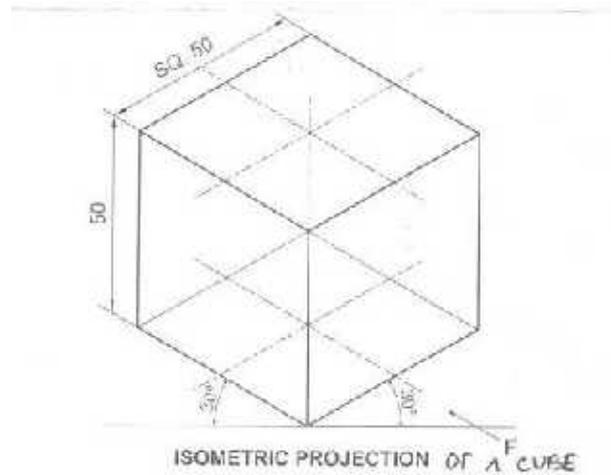
25) Isometric projection of a horizontal square



## SECTION B

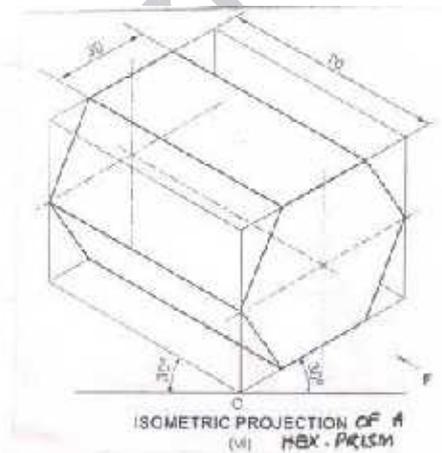
This Section B has 24 Multiple Choice Questions. Attempt any 20 questions.

26)



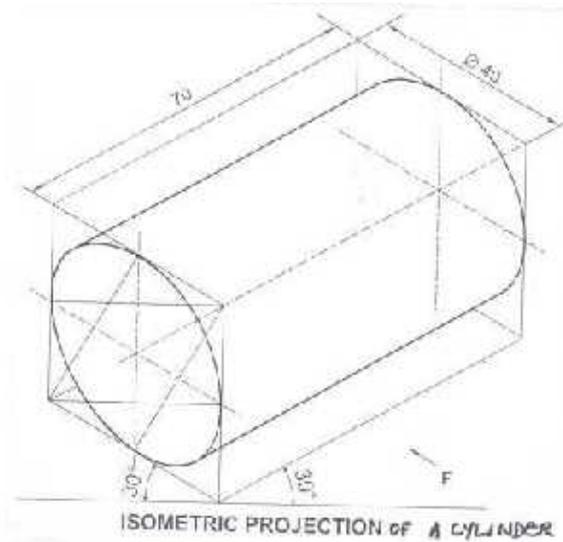
- a) The base edge of a cube is not equal to its height.
- b) The base edge of a cube is equal to its height.
- c) A cube has eight faces.
- d) A cube has an apex.

27)



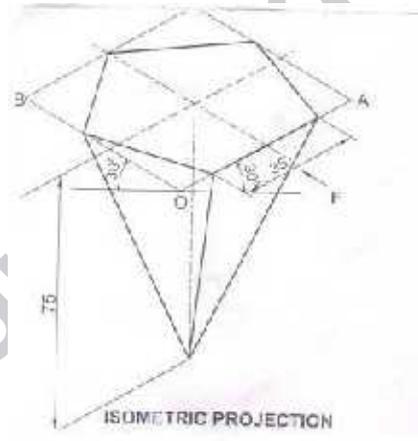
- a) Axis of the prism is perpendicular to H.P.
- b) Axis of the prism is parallel to V.P.
- c) Hexagonal ends of the prism are perpendicular to V.P.
- d) Hexagonal ends of the prism are parallel to V.P.

28)



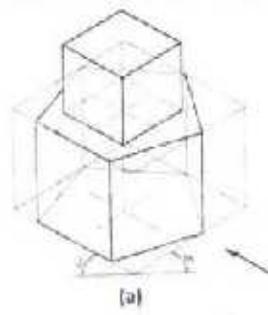
- a) The cylinder is resting on H.P. with one of its long edges on it.
- b) The cylinder is resting on H.P. with its base on it.
- c) The cylinder is resting on H.P. with one of its rectangular faces on it.
- d) The cylinder is resting on H.P. with its axis parallel to both H.P. and V.P.

29)



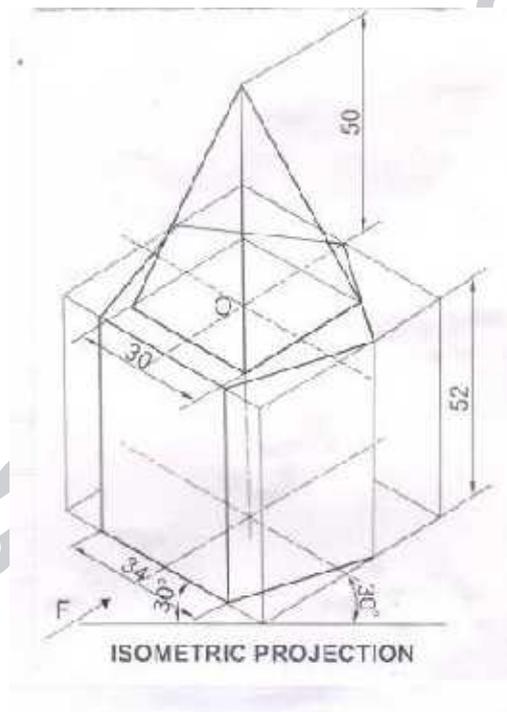
- a) The axis is inclined to H.P.
- b) The axis is inclined to V.P.
- c) The axis is perpendicular to H.P. and parallel to V.P.
- d) The axis is perpendicular to V.P. and parallel to H.P.

30)



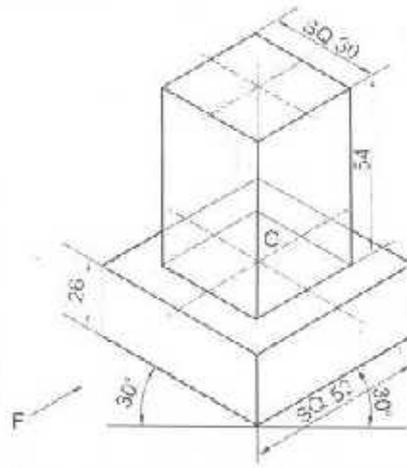
- a) One of the base sides of the pentagonal pyramid is perpendicular to V.P.
- b) One of the base sides of the pentagonal pyramid is parallel to V.P.
- c) One of the base sides of the pentagonal prism is perpendicular to V.P.
- d) One of the base sides of the pentagonal prism is parallel to V.P.

31)



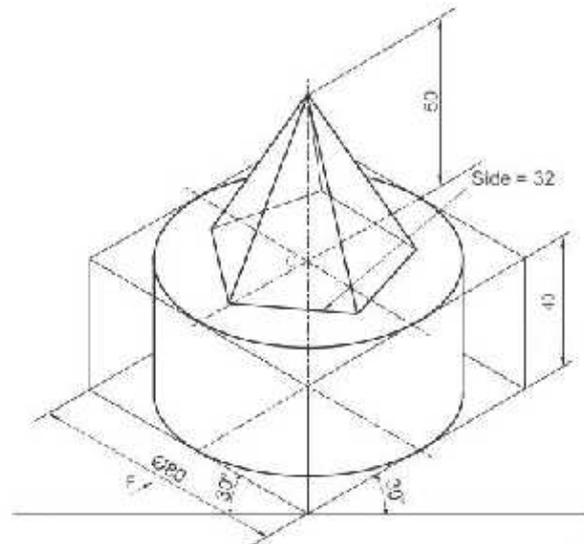
- a) The common axis is perpendicular to HP and parallel to VP
- b) The common axis is perpendicular to VP and parallel to HP
- c) The axis of the prism is parallel to HP and the axis of the pyramid is perpendicular to HP
- d) The axis of the prism is perpendicular to HP and the axis of the pyramid is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

32)



- a) The top solid is square prism and the bottom solid is triangular prism.
- b) The top solid is triangular prism and the bottom solid is square prism.
- c) Both the solids are square prisms.
- d) Both the solids are triangular prisms.

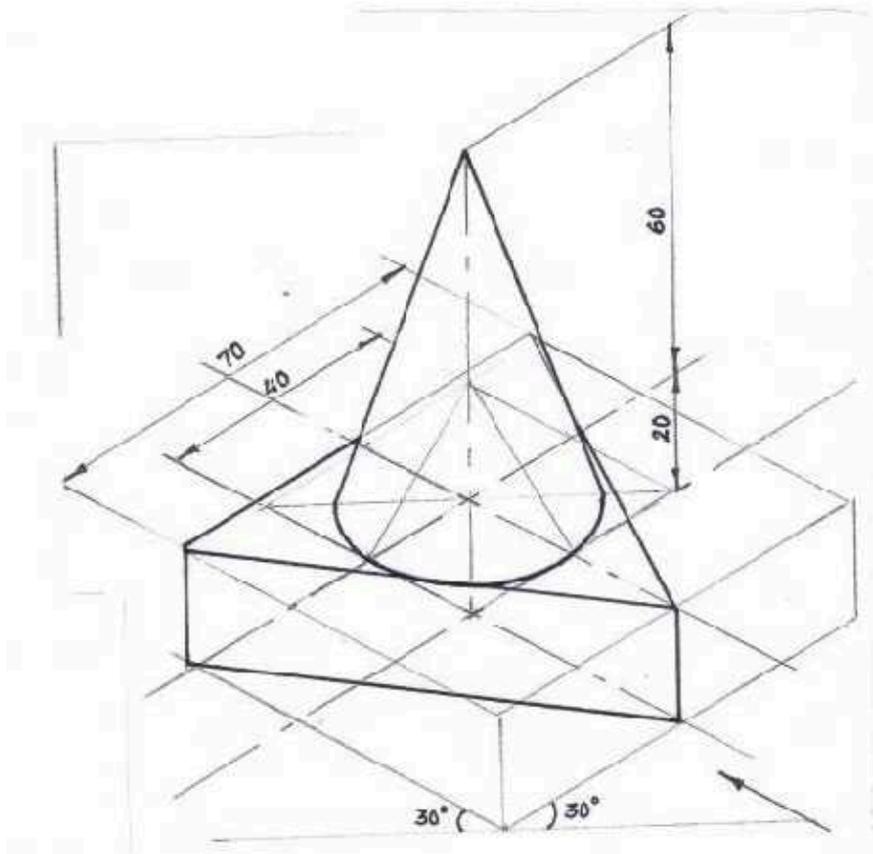
33)



- a) The size of common axis is true 90mm.
- b) The size of common axis is less than true 90mm.
- c) The size of common axis is more than true 90mm.
- d) The size of common axis is true 100mm.

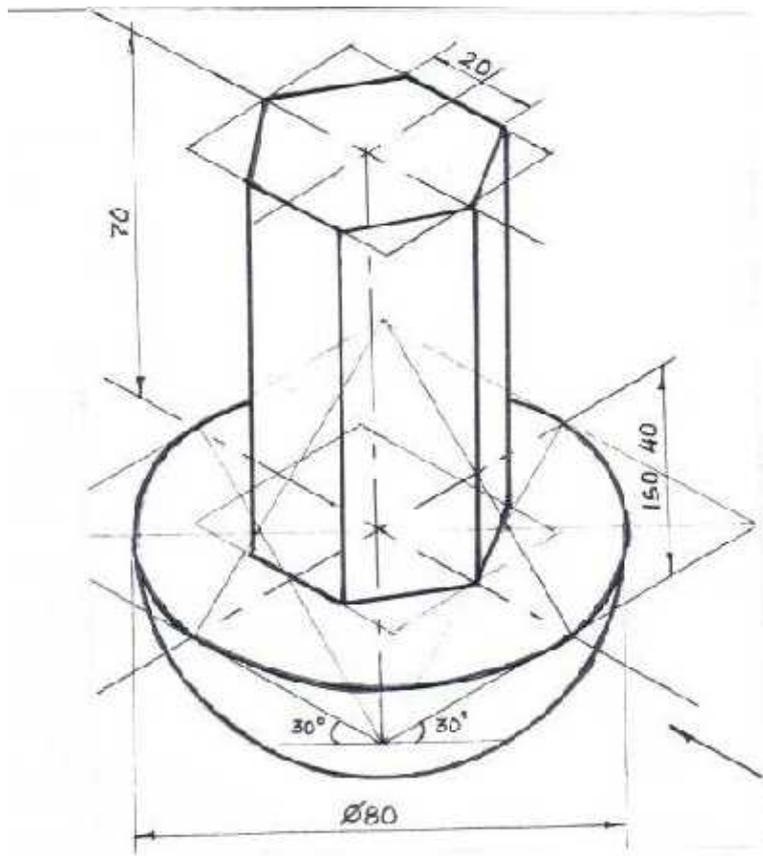
**SELECT THE CORRECT OPTION CORRESPONDING TO THE ORIENTATION OF THE GIVEN ISOMETRIC PROJECTION OF COMBINATION OF SOLIDS.**

34)



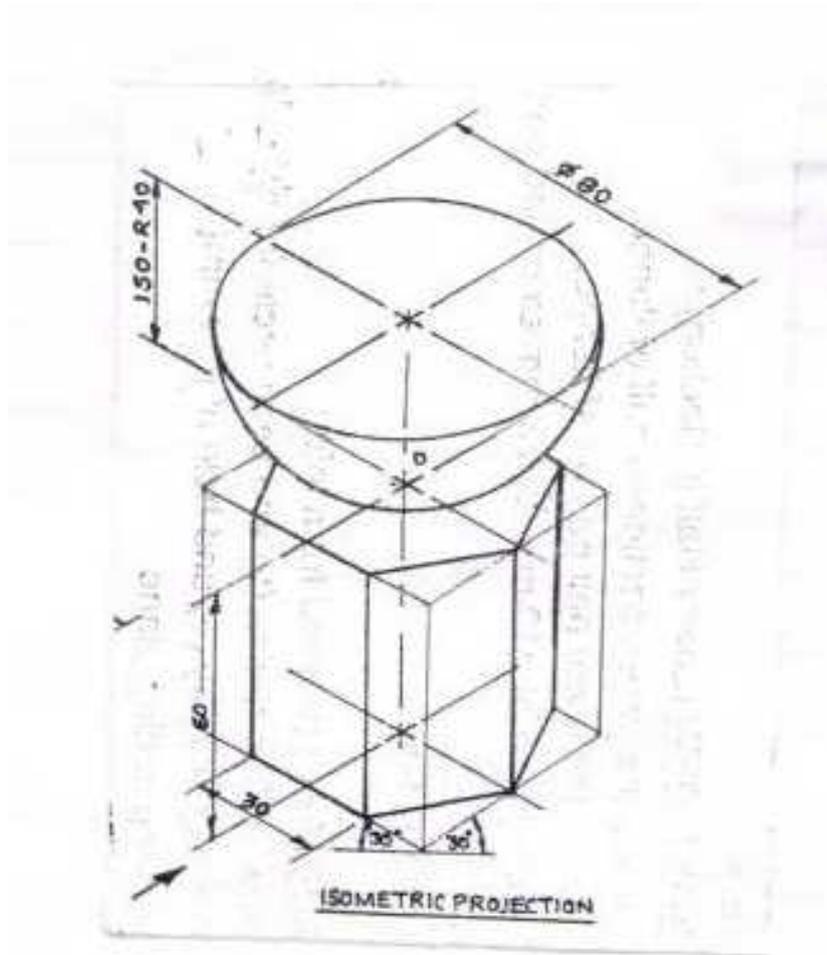
- Both the solids are vertical and one of the base edges of the prism is parallel to VP and nearer the observer.
- Both the solids are vertical and one of the base edges of the prism is perpendicular to VP.
- Both the solids are vertical and one of the base edges of the prism is parallel to VP and near it.
- Both the solids are vertical and two of the base edges of the prism are parallel to VP.

35)



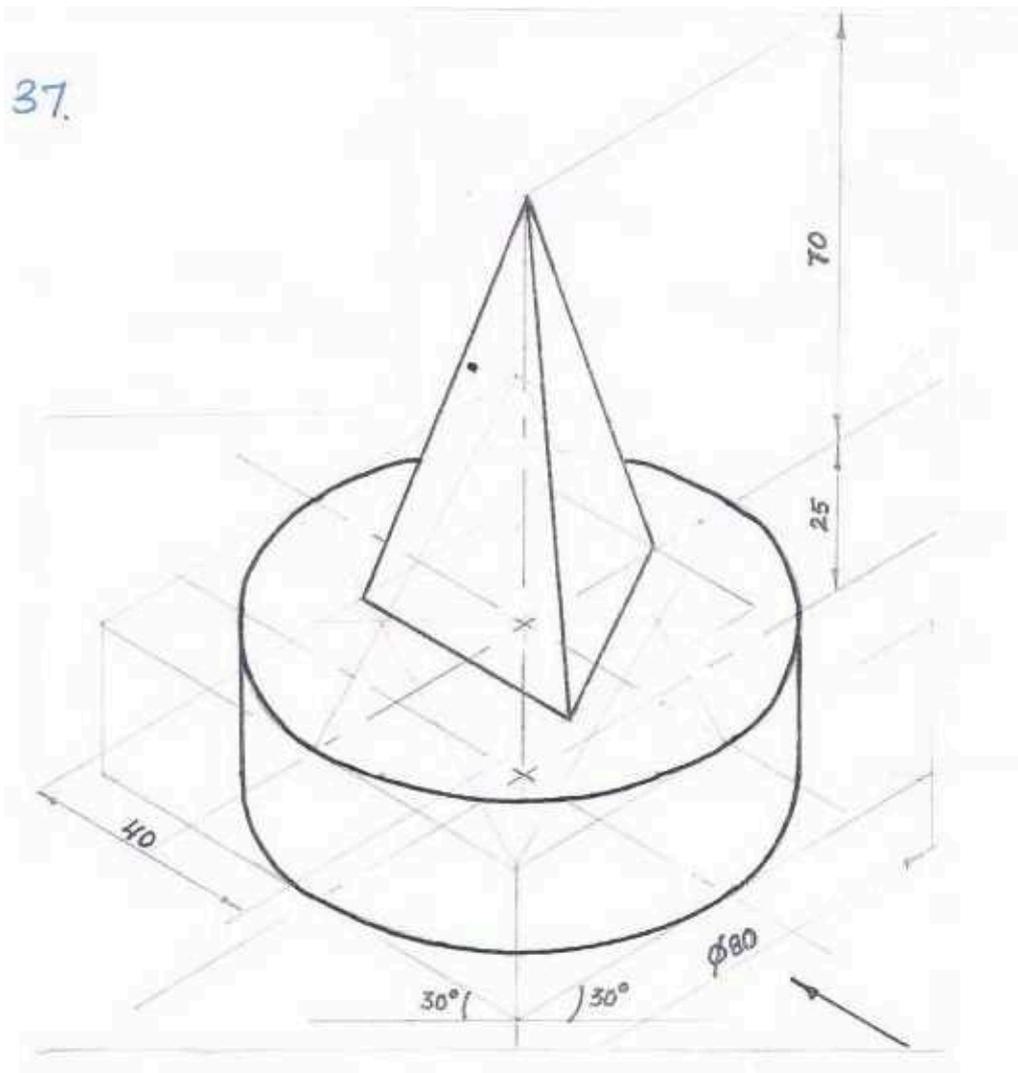
- a) The common axis is perpendicular to HP and two of the base edges of the prism are perpendicular to VP
- b) The common axis is perpendicular to VP and two of the base edges of the prism are perpendicular to VP
- c) The common axis is perpendicular to HP and two of the base edges of the prism are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

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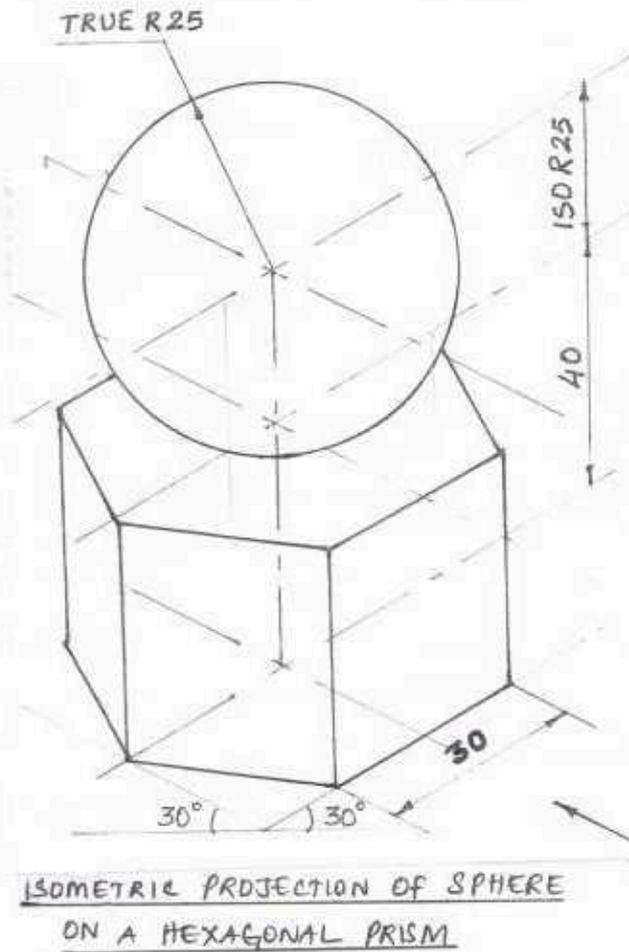


- a) A hemisphere is kept centrally on the top hexagonal surface of a hexagonal prism with its curved surface on it.
- b) A sphere is kept centrally on the top hexagonal surface of a hexagonal prism with its curved surface on it.
- c) A hemisphere is kept centrally on the top rectangular face of a hexagonal prism with its curved surface on it.
- d) A sphere is kept centrally on the top rectangular face of a hexagonal prism with its curved surface on it.

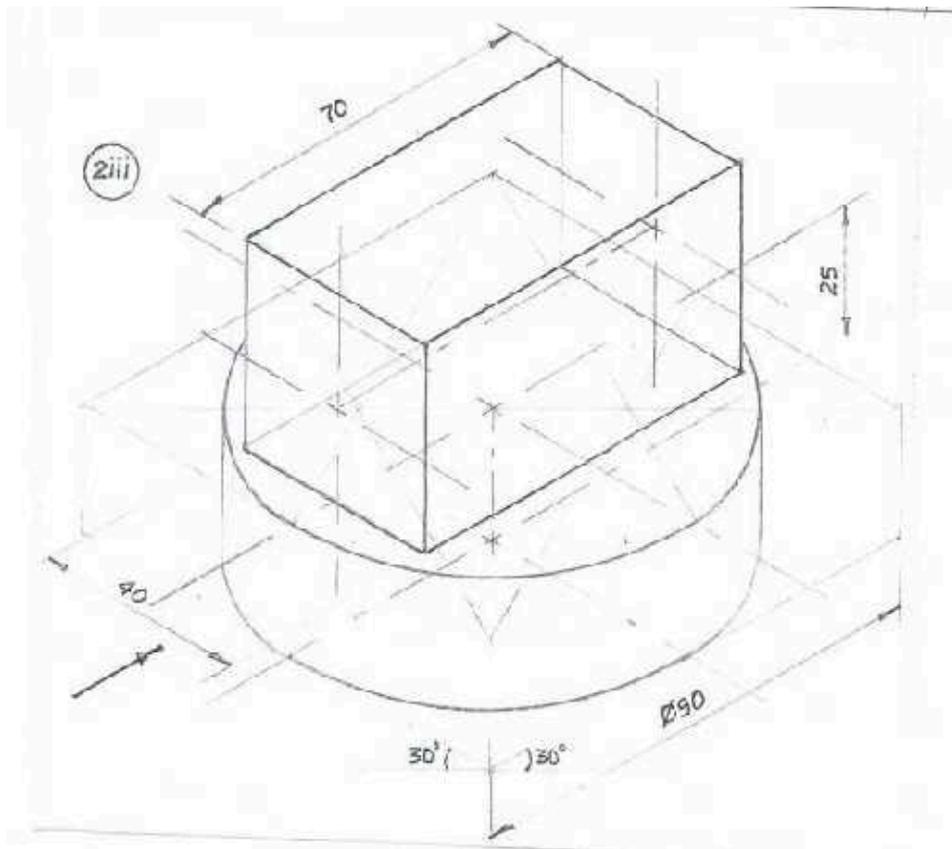
37)



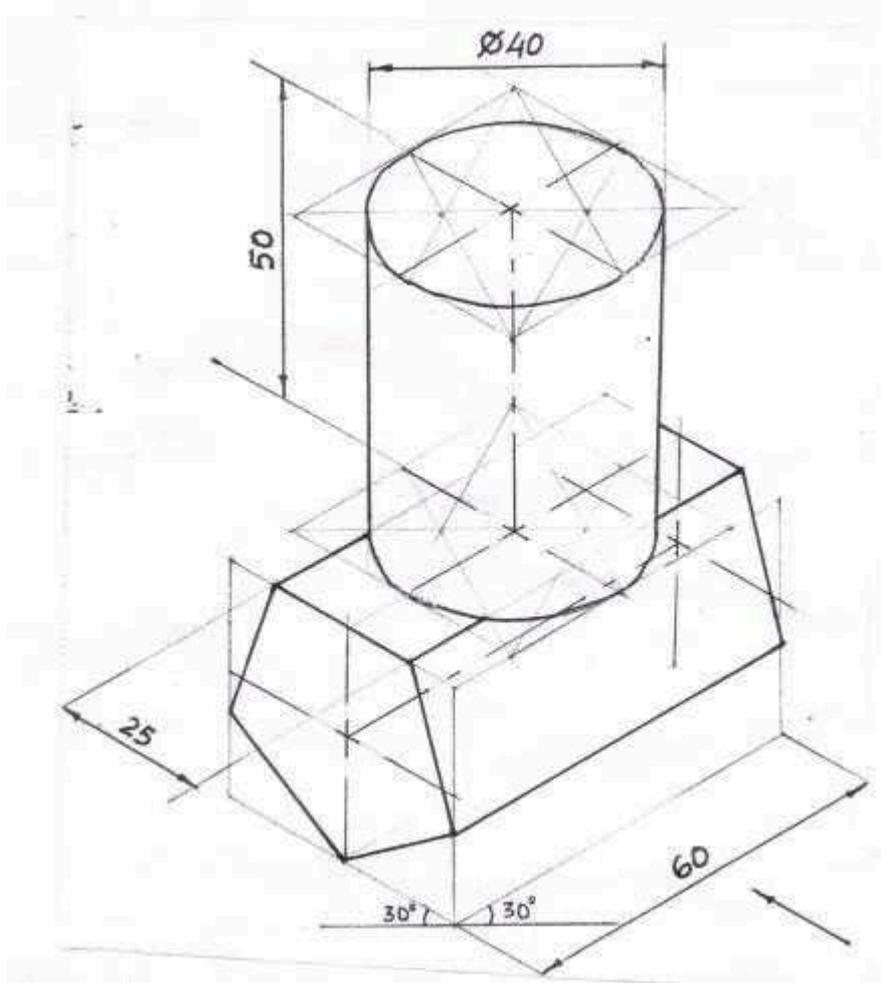
- a) A vertical square pyramid is kept on a vertical circular disc.
- b) A vertical triangular pyramid is kept on a vertical square slab.
- c) A vertical square pyramid is kept on a vertical square slab.
- d) A vertical triangular pyramid is kept on a vertical circular disc.



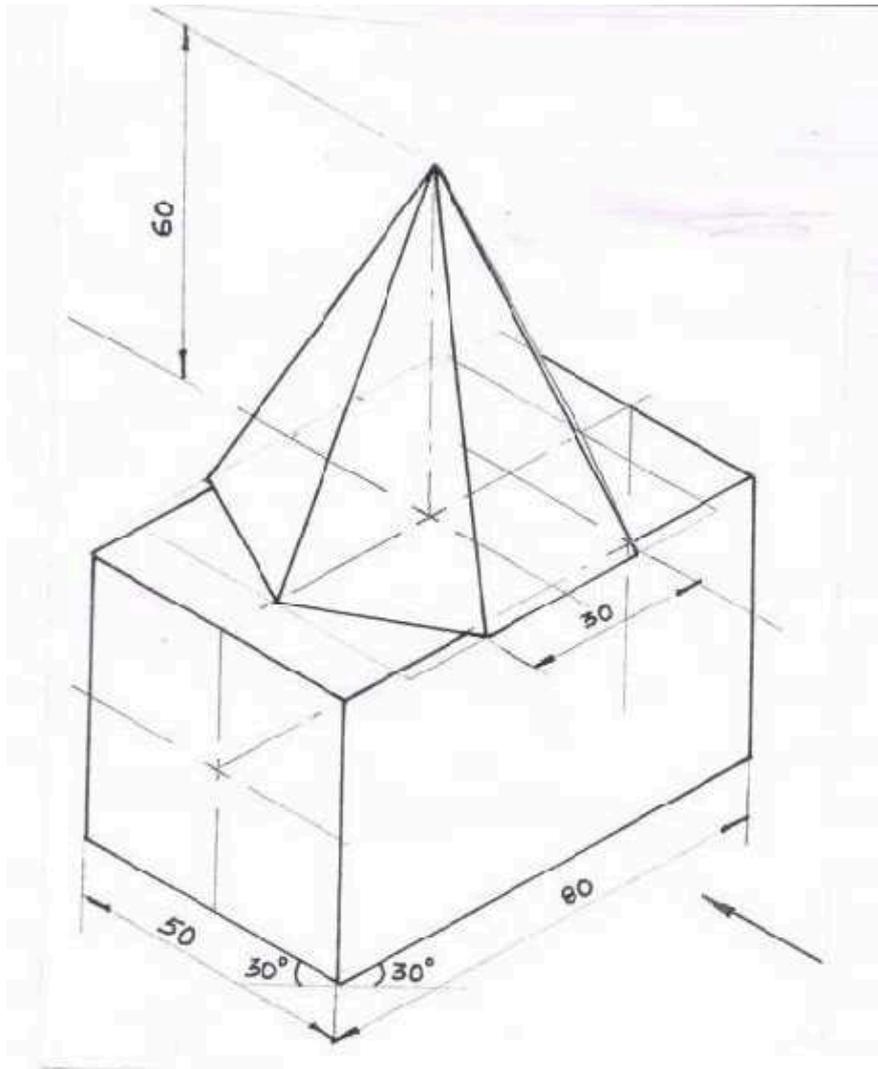
- The isometric projection of a sphere is a circle whose diameter is equal to the isometric diameter of the sphere.
- The isometric projection of a sphere is a circle whose diameter is equal to the true diameter of the sphere.
- The isometric projection of a sphere is a circle whose diameter is equal to half of the true diameter of the sphere.
- The isometric projection of a sphere is a circle whose diameter is equal to double of the true diameter of the sphere.



- a) Axis of both prism and cylinder are perpendicular to HP.
- b) Axis of both prism and cylinder are perpendicular to VP.
- c) Axis of prism is perpendicular to VP and axis of cylinder is perpendicular to HP.
- d) Axis of prism is perpendicular to HP and axis of cylinder is perpendicular to VP.



- 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.
- 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.
- 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.
- 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.



- A vertical pentagonal pyramid with one of its base edges parallel to VP is placed centrally on a horizontal square prism with its square ends parallel to VP.
- A vertical pentagonal pyramid with one of its base edges perpendicular to VP is placed centrally on a horizontal square prism with its square ends perpendicular to VP.
- A vertical hexagonal pyramid with two of its base edges perpendicular to VP is placed centrally on a horizontal square prism with its square ends parallel to VP.
- A vertical hexagonal pyramid with two of its base edges parallel to VP is placed centrally on a horizontal square prism with its square ends perpendicular to VP.

**TWO STATEMENTS ARE GIVEN – ONE LABELLED ASSERTION (A) AND THE OTHER LABELLED REASON (R). SELECT THE CORRECT ANSWER TO THE FOLLOWING QUESTIONS FROM THE CODES (a), (b), (c) AND (d) AS GIVEN BELOW:**

- Both A and R are true and R is the correct explanation of A.
- Both A and R are true and R is not the correct explanation of A.
- A is true but R is false.
- A is false and R is also false.

- 42) A: Knuckle thread is a modification of a square thread.  
R: Knuckle threads are used in electric bulbs.
- 43) A: The portion between the crest and root is called flank.  
R: The angle between the flanks in a metric thread is  $90^\circ$ .
- 44) A: The actual depth of square thread is given as  $0.96P$ , where  $P$  represents the pitch of thread.  
R: The portion between crest and root is called as pitch.
- 45) A: Left hand thread is represented by LH thread.  
R: Usually all the jewellery mating pieces have LH threads.
- 46) A: Chamfering on a nut is the process of removing sharp corners by rounding off the corners.  
R: Chamfering is done on a nut to ensure the safety of the user.
- 47) A: A plain washer is a circular plate having a hole in its centre.  
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  $2D+6$ .
- 48) A: The angle of chamfer is  $60^\circ$  with the base of a nut.  
R: A hexagonal headed bolt cannot be used with a hexagonal nut.
- 49) A: Triple start threads are more useful when a quick advance is required in a screwed pair, than single start threads.  
R: If  $L$  represents Lead and  $P$  the pitch of the screw threads,  
 $L = P$  in the case of single start thread.  
 $L = 3P$  in the case of triple start threads.

### SECTION C

This Section C has 6 Multiple Choice Questions. Attempt any 5 questions.

#### ANSWER THE FOLLOWING QUESTIONS AFTER READING THE GIVEN PASSAGE:

Amit buys a football as a gift for his brother. The radius of the football is 15 cm. He packs it in a square box (cube) which is just fit enough. His brother is very happy. He is a footballer and he also loves to sketch. He sketches a 3-D model of this football placed on the apex of a triangular pyramid, making it look like a trophy. He might 3-D Print his model as an inspiration. He is aspiring to win the Inter-School Football Championship this year.



- 50) What will be the minimum dimension of side of the gift-box (cube)?
- 15 cm
  - 30 cm
  - 45 cm
  - 60 cm
- 51) If he has used isometric projection method to obtain the 3 – D model, then the size of the football drawn will be
- double
  - foreshortened
  - same
  - halved
- 52) The isometric projection of the equilateral triangular base of his model will be
- an equilateral triangle
  - an isosceles triangle
  - a scalene triangle
  - a right angled triangle
- 53) What is the orientation of the common axis of these two solids?
- Axis parallel to HP and VP
  - Axis perpendicular to HP
  - Axis perpendicular to VP
  - None of the above

- 54) In case he uses a triangular prism instead of the pyramid, what will be the height of his trophy?
- a) It remains same
  - b) It becomes double
  - c) It becomes half
  - d) It becomes triple
- 55) He used \_\_\_\_\_ in his isometric projection method.
- a) True scale
  - b) Vernier scale
  - c) Diagonal scale
  - d) Isometric scale