INTRODUCTION TO EUCLID'S GEOMETRY

➢ IMPORTANT POINTS

- A solid has shape, size, position and can be moved from one place to another, its boundaries are called surfaces.
- The boundaries of the surfaces are curves or straight line and these lines end in points.
- A point is that which has no part.
- A line is breadthless length.
- The ends of a line are points
- A straight line is a line which lies evently with the points on itself.
- A surface is that which has length and breadth only. The edges of a surface are lines.
- A plane surface is a surface which lies evently with the straight lines on itself.
- The assumptions that were specific to geometry are called 'postulate'.
- Common notion, often called 'axioms', were assumptions used throughout mathematics and not specifically linked to geometry.
- **Euclid's five Postulates**
  - (i) **Postulate 1 :** A straight line may be drawn from any one point to any other point
  - (ii) **Postulate 2 :** A terminated line canbe produced indefinitely.
  - (iii) **Postulate 3 :** A circle can be drawn with any centre and any radius.
  - (iv) **Postulate 4 :** All right angles are equal to one another
  - (v) **Postulate 5 :** If a straight line falling on two straight lines makes the interior angles on the same side of it taken together less than two right angles, then the two straight lines, if produced indefinitely, meet on that side on which the sum of angles is less than two right angles.
- An equilateral triangle can be constructed on any given line segment
- Two distinct lines cannot have more than one point in common.
- Two distinct intersecting lines cannot be parallel to the same line.

EXERCISE

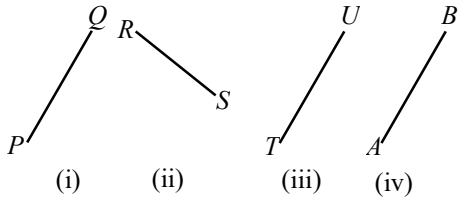
A. Single Choice Questions

Q.1 Given two distinct points, there are so many lines that passes through them -
(A) True
(B) False
(C) Can not be obtained
(D) None of these

Q.2 When any system of axioms is given, it needs to be ensured that the system is consistent -
(A) True (B) False
(C) Does not exist (D) None of these

Q.3 If P, Q and R are three points on a line, and Q lies between P and R, then -
(A) PQ + QR = PR (B) PR + RQ = PQ
(C) RP + QR = PQ (D) None of these

Q.4 Which of the following lines are parallel ?

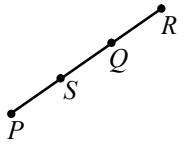


(A) (i) and (ii) (B) (ii) and (iii)
(C) (i), (ii) and (iii) (D) (i), (iii) and (iv)

Q.5 Theorems are statements which are proved, using definitions, axioms, previously proved statements and deductive reasoning -
(A) Yes (B) No
(C) Does not exist (D) None of these

Q.6 If a point Q lies between two points P and R such that PQ = QR, then point Q is called -
(A) Mid point
(B) Line segment
(C) Segment point
(D) None of these

Q.7 In fig. if PQ = SR, then -



(A) PS = SR (B) PQ ≠ SR
(C) PQ = QR (D) PS = QR

Q.8 Every line segment has one and only one mid-point -
(A) True (B) False
(C) Un predictable (D) None of these

Q.9 An angle is formed when two rays originate from the same end point -
(A) True (B) False
(C) Un predictable (D) None of these

Q.10 A part of a line with two end points is called a -
(A) line-segment (B) segment
(C) point segment (D) None of these

Q.11 A part of a line with one end point is called a -
(A) line (B) ray
(C) line segment (D) None of these

Q.12 If three or more points lie on the same line, they are called collinear points -
(A) True (B) False
(C) Un predictable (D) None of these

Q.13 If three or more points are not lie on the same line, they are called non-collinear points -
(A) True (B) False
(C) Un predictable (D) None of these

Q.14 A circle can be drawn with any centre and any radius -
(A) True (B) False
(C) Does not exist (D) None of these

Q.15 A straight line may not be drawn from any one point to any other point -

(A) True (B) False

(C) Un predictable (D) None of these

Q.16 A terminated line can not be produced indefinitely on both the sides -

(A) True (B) False

(C) Un predictable (D) None of these

Q.17 If two circles are equal, then their radii are equal-

(A) True

(B) False

(C) Can not be obtained

(D) None of these

Q.18 The distance of a point from a line is the length of the perpendicular from the point to the line-

(A) True

(B) False

(C) Can not be obtained

(D) None of these

Q.19 The Euclidean geometry is valid only for the figures in the plane -

(A) True (B) False

(C) Un predictable (D) None of these

Q.20 Things which concide with one another are–

(A) not equal to one another

(B) equal to one another

(C) identical to one another

(D) None of these

B. Fill in the Blanks

Q.21 Axioms or postulates are the ..... which are obvious universal truths.

Q.22 If equals are added to ....., the wholes are equal.

Q.23 If equals are subtracted from equals the ..... are equal.

Q.24 All ..... angles are equal to one another.

Q.25 There are ..... line (s) which pass through two distinct points.

Q.26 Two distinct lines can not have more than..... point in common.

Q.27 A ..... is that which has no part.

Q.28 The ..... of a line are .....

Q.29 The whole is ..... the part.

Q.30 Things which are ..... of the same things are equal to one another.

Q. 31 The assumptions that were specific to geometry are called .....

Q.32 Two distinct intersecting lines cannot be ..... to the same line.

ANSWER KEY

A. SINGLE CHOICE QUESTIONS :

1. (B)	**2.** (A)	**3.** (A)	**4.** (D)
5. (A)	**6.** (A)	**7.** (D)	**8.** (A)
9. (A)	**10.** (A)	**11.** (B)	**12.** (A)
13. (A)	**14.** (A)	**15.** (B)	**16.** (B)
17. (A)	**18.** (A)	**19.** (A)	**20.** (B)

B. FILL IN THE BLANKS :

21. assumptions	**22.** equals	**23.** remainders	**24.** right
25. one	**26.** one	**27.** point	**28.** ends, points
29. greater than	**30.** halves or double	**31.** postulate	**32.** parallel