MS CENTRE
9791366374

9TH STANDARD EM

MATHEMATICS
BOOK BACK ONE MARKS
Multiple Choice Questions

1.SET LANGUAGE

1. Which of the following is correct?
   (1) $\{7\} \in \{1,2,3,4,5,6,7,8,9,10\}$ (2) $7 \in \{1,2,3,4,5,6,7,8,9,10\}$
   (3) $7 \notin \{1,2,3,4,5,6,7,8,9,10\}$ (4) $\{7\} \nsubseteq \{1,2,3,4,5,6,7,8,9,10\}$

2. The set $P = \{x \mid x \in \mathbb{Z}\ , -1 < x < 1\}$ is a
   (1) Singleton set (2) Power set (3) Null set (4) Subset

3. If $U = \{x \mid x \in \mathbb{N}, x < 10\}$ and $A = \{x \mid x \in \mathbb{N}, 2 \le x < 6\}$ then $(A')'$ is
   (1) {1, 6, 7, 8, 9} (2) {1, 2, 3, 4} (3) {2, 3, 4, 5} (4) { }

4. If $B \subseteq A$ then $n(A \cap B)$ is
   (1) $n(A-B)$ (2) $n(B)$ (3) $n(B - A)$ (4) $n(A)$

5. If $A = \{x, y, z\}$ then the number of non- empty subsets of A is
   (1) 8 (2) 5 (3) 6 (4) 7

6. Which of the following is correct?
(1) $\varnothing \subseteq \{a, b\}$ (2) $\varnothing \in \{a, b\}$ (3) $\{a\} \in \{a, b\}$ (4) $a \subseteq \{a, b\}$

7. If $A \cup B = A \cap B$, then
(1) $A \neq B$ (2) $A = B$ (3) $A \subset B$ (4) $B \subset A$

8. If $B - A$ is B, then $A \cap B$ is
(1) A (2) B (3) U (4) $\varnothing$

9. From the adjacent diagram $n[P(A \Delta B)]$ is
(1) 8 (2) 16
(3) 32 (4) 64

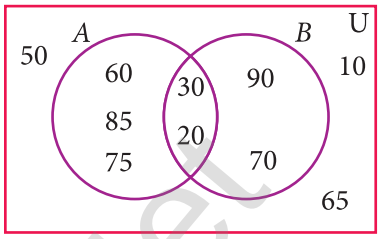


Fig. 1.40

10. If $n(A) = 10$ and $n(B) = 15$, then the minimum and maximum number of elements in $A \cap B$ is
(1) 10,15 (2) 15,10 (3) 10,0 (4) 0,10

11. Let $A = \{\varnothing\}$ and $B = P(A)$, then $A \cap B$ is
(1) $\{\varnothing, \{\varnothing\}\}$ (2) $\{\varnothing\}$ (3) $\varnothing$ (4) $\{0\}$

12. In a class of 50 boys, 35 boys play Carrom and 20 boys play Chess then the number of boys play both games is
(1) 5 (2) 30 (3) 15 (4) 10.

13. If $U = \{x : x \in \mathbb{N} \text{ and } x < 10\}$, $A = \{1,2,3,5,8\}$ and $B = \{2,5,6,7,9\}$, then $n\left[(A \cup B)'\right]$ is
(1) 1 (2) 2 (3) 4 (4) 8

14. For any three sets P, Q and R, $P - (Q \cap R)$ is
(1) $P - (Q \cup R)$ (2) $(P \cap Q) - R$
(3) $(P - Q) \cup (P - R)$ (4) $(P - Q) \cap (P - R)$

15. Which of the following is true?
(1) $A - B = A \cap B$ (2) $A - B = B - A$
(3) $(A \cup B)' = A' \cup B'$ (4) $(A \cap B)' = A' \cup B'$

16. If $n(A \cup B \cup C) = 100$, $n(A) = 4x$, $n(B) = 6x$, $n(C) = 5x$, $n(A \cap B) = 20$, $n(B \cap C) = 15$, $n(A \cap C) = 25$ and $n(A \cap B \cap C) = 10$, then the value of x is
(1) 10 (2) 15 (3) 25 (4) 30

17. For any three sets A, B and C, $(A - B) \cap (B - C)$ is equal to
(1) A only (2) B only (3) C only (4) ϕ

18. If J = Set of three sided shapes, K = Set of shapes with two equal sides and L = Set of shapes with right angle, then $J \cap K \cap L$ is
(1) Set of isoceles triangles (2) Set of equilateral triangles
(3) Set of isoceles right triangles (4) Set of right angled triangles

19. The shaded region in the Venn diagram is
(1) $Z - (X \cup Y)$ (2) $(X \cup Y) \cap Z$
(3) $Z - (X \cap Y)$ (4) $Z \cup (X \cap Y)$

20. In a city, 40% people like only one fruit, 35% people like only two fruits, 20% people like all the three fruits. How many percentage of people do not like any one of the above three fruits?
(1) 5 (2) 8 (3) 10 (4) 15

2.REAL NUMBERS

1. If n is a natural number then $\sqrt{n}$ is
(1) always a natural number. (2) always an irrational number.
(3) always a rational number (4) may be rational or irrational

2. Which of the following is not true?.
(1) Every rational number is a real number. (2) Every integer is a rational number.
(3) Every real number is an irrational number. (4) Every natural number is a whole number.

3. Which one of the following, regarding sum of two irrational numbers, is true?
(1) always an irrational number. (2) may be a rational or irrational number.
(3) always a rational number. (4) always an integer.

4. Which one of the following has a terminating decimal expansion?.
(1) $\frac{5}{64}$ (2) $\frac{8}{9}$ (3) $\frac{14}{15}$ (4) $\frac{1}{12}$

5. Which one of the following is an irrational number
(1) $\sqrt{25}$ (2) $\sqrt{\frac{9}{4}}$ (3) $\frac{7}{11}$ (4) π

6. An irrational number between 2 and 2.5 is

(1) $\sqrt{11}$ (2) $\sqrt{5}$ (3) $\sqrt{2.5}$ (4) $\sqrt{8}$

7. The smallest rational number by which $\frac{1}{3}$ should be multiplied so that its decimal expansion terminates with one place of decimal is

(1) $\frac{1}{10}$ (2) $\frac{3}{10}$ (3) 3 (4) 30

8. If $\frac{1}{7} = 0.\overline{142857}$ then the value of $\frac{5}{7}$ is

(1) $0.\overline{142857}$ (2) $0.\overline{714285}$ (3) $0.\overline{571428}$ (4) 0.714285

9. Find the odd one out of the following.

(1) $\sqrt{32} \times \sqrt{2}$ (2) $\frac{\sqrt{27}}{\sqrt{3}}$ (3) $\sqrt{72} \times \sqrt{8}$ (4) $\frac{\sqrt{54}}{\sqrt{18}}$

10. $0.\overline{34} + 0.3\overline{4} =$

(1) $0.6\overline{87}$ (2) $0.\overline{68}$ (3) $0.6\overline{8}$ (4) $0.68\overline{7}$

11. Which of the following statement is false?

(1) The square root of 25 is 5 or -5 (3) $\sqrt{25} = 5$

(2) $-\sqrt{25} = -5$ (4) $\sqrt{25} = \pm 5$

12. Which one of the following is not a rational number?

(1) $\sqrt{\frac{8}{18}}$ (2) $\frac{7}{3}$ (3) $\sqrt{0.01}$ (4) $\sqrt{13}$

13. $\sqrt{27} + \sqrt{12} =$

(1) $\sqrt{39}$ (2) $5\sqrt{6}$ (3) $5\sqrt{3}$ (4) $3\sqrt{5}$

14. If $\sqrt{80} = k\sqrt{5}$, then $k =$

(1) 2 (2) 4 (3) 8 (4) 16

15. $4\sqrt{7} \times 2\sqrt{3} =$

(1) $6\sqrt{10}$ (2) $8\sqrt{21}$ (3) $8\sqrt{10}$ (4) $6\sqrt{21}$

16. When written with a rational denominator, the expression $\frac{2\sqrt{3}}{3\sqrt{2}}$ can be simplified as

(1) $\frac{\sqrt{2}}{3}$ (2) $\frac{\sqrt{3}}{2}$ (3) $\frac{\sqrt{6}}{3}$ (4) $\frac{2}{3}$

17. When $\left(2\sqrt{5}-\sqrt{2}\right)^2$ is simplified, we get

(1) $4\sqrt{5}+2\sqrt{2}$ (2) $22-4\sqrt{10}$ (3) $8-4\sqrt{10}$ (4) $2\sqrt{10}-2$

18. $\left(0.000729\right)^{\frac{-3}{4}} \times \left(0.09\right)^{\frac{-3}{4}}$ = _____

(1) $\frac{10^3}{3^3}$ (2) $\frac{10^5}{3^5}$ (3) $\frac{10^2}{3^2}$ (4) $\frac{10^6}{3^6}$

19. If $\sqrt{9^x} = \sqrt[3]{9^2}$, then x = _____

(1) $\frac{2}{3}$ (2) $\frac{4}{3}$ (3) $\frac{1}{3}$ (4) $\frac{5}{3}$

20. The length and breadth of a rectangular plot are 5×10^5 and 4×10^4 metres respectively. Its area is _____.

(1) $9\times10^1\ m^2$ (2) $9\times10^9\ m^2$ (3) $2\times10^{10}\ m^2$ (4) $20\times10^{20}\ m^2$

3.ALGEBRA

1. If $x^3 + 6x^2 + kx + 6$ is exactly divisible by $(x + 2)$, then k= ?

   (1) –6 (2) –7 (3) –8 (4) 11

2. The root of the polynomial equation $2x + 3 = 0$ is

   (1) $\frac{1}{3}$ (2) $-\frac{1}{3}$ (3) $-\frac{3}{2}$ (4) $-\frac{2}{3}$

3. The type of the polynomial $4–3x^3$ is

   (1) constant polynomial (2) linear polynomial
   (3) quadratic polynomial (4) cubic polynomial.

4. If $x^{51} + 51$ is divided by $x + 1$, then the remainder is

   (1) 0 (2) 1 (3) 49 (4) 50

5. The zero of the polynomial $2x+5$ is

   (1) $\frac{5}{2}$ (2) $-\frac{5}{2}$ (3) $\frac{2}{5}$ (4) $-\frac{2}{5}$

6. The sum of the polynomials $p(x) = x^3 – x^2 – 2$, $q(x) = x^2–3x+ 1$

   (1) $x^3 – 3x – 1$ (2) $x^3 + 2x^2 – 1$ (3) $x^3 – 2x^2 – 3x$ (4) $x^3 – 2x^2 + 3x –1$

7. Degree of the polynomial $(y^3–2)(y^3 + 1)$ is

   (1) 9 (2) 2 (3) 3 (4) 6

8. Let the polynomials be

   (A) $–13q^5 + 4q^2 + 12q$ (B) $(x^2 +4)(x^2 + 9)$
   (C) $4q^8 – q^6 + q^2$ (D) $-\frac{5}{7}y^{12} + y^3 + y^5$

   Then ascending order of their degree is

   (1) A,B,D,C (2) A,B,C,D (3) B,C,D,A (4) B,A,C,D

9. If $p(a) = 0$ then $(x - a)$ is a _____ of $p(x)$

   (1) divisor (2) quotient (3) remainder (4) factor

10. Zeros of $(2 - 3x)$ is _____

    (1) 3 (2) 2 (3) $\frac{2}{3}$ (4) $\frac{3}{2}$

11. Which of the following has $x - 1$ as a factor?

    (1) $2x - 1$ (2) $3x - 3$ (3) $4x - 3$ (4) $3x - 4$

12. If $x - 3$ is a factor of $p(x)$, then the remainder is

    (1) 3 (2) –3 (3) $p(3)$ (4) $p(–3)$

13. $(x + y)(x^2 - xy + y^2)$ is equal to

    (1) $(x + y)^3$ (2) $(x - y)^3$ (3) $x^3 + y^3$ (4) $x^3 - y^3$

14. $(a+b-c)^2$ is equal to _____
(1) $(a-b+c)^2$ (2) $(-a-b+c)^2$ (3) $(a+b+c)^2$ (4) $(a-b-c)^2$

15. In an expression ax^2+bx+c the sum and product of the factors respectively,
(1) a, bc (2) b, ac (3) ac, b (4) bc, a

16. If $(x+5)$ and $(x-3)$ are the factors of ax^2+bx+c, then values of a, b and c are
(1) 1,2,3 (2) 1,2,15 (3) 1,2, −15 (4) 1, −2,15

17. Cubic polynomial may have maximum of _____ linear factors
(1) 1 (2) 2 (3) 3 (4) 4

18. Degree of the constant polynomial is _____
(1) 3 (2) 2 (3) 1 (4) 0

19. Find the value of m from the equation $2x+3y=m$. If its one solution is $x=2$ and $y=-2$.
(1) 2 (2) −2 (3) 10 (4) 0

20. Which of the following is a linear equation
(1) $x+\frac{1}{x}=2$ (2) $x(x-1)=2$ (3) $3x+5=\frac{2}{3}$ (4) $x^3-x=5$

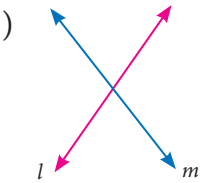
21. Which of the following is a solution of the equation $2x-y=6$
(1) (2,4) (2) (4,2) (3) (3, −1) (4) (0,6)

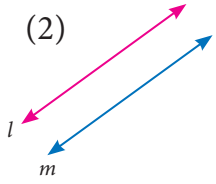
22. If (2,3) is a solution of linear equation $2x+3y=k$ then, the value of k is
(1) 12 (2) 6 (3) 0 (4) 13

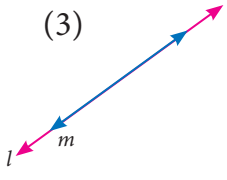
23. Which condition does not satisfy the linear equation $ax+by+c=0$
(1) $a\neq 0$, $b=0$ (2) $a=0$, $b\neq 0$
(3) $a=0$, $b=0, c\neq 0$ (4) $a\neq 0$, $b\neq 0$

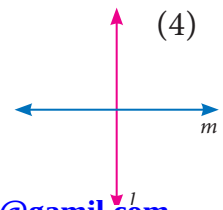
24. Which of the following is not a linear equation in two variable
(1) $ax+by+c=0$ (2) $0x+0y+c=0$
(3) $0x+by+c=0$ (4) $ax+0y+c=0$

25. The value of k for which the pair of linear equations $4x+6y-1=0$ and $2x+ky-7=0$ represents parallel lines is
(1) $k=3$ (2) $k=2$ (3) $k=4$ (4) $k=-3$

26. A pair of linear equations has no solution then the graphical representation is
(1) 

(2) 

(3) 

(4) 

27. If $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ where $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ then the given pair of linear equation has _____ solution(s)

(1) no solution (2) two solutions (3) unique (4) infinite

28. If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ where $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ then the given pair of linear equation has _____ solution(s)

(1) no solution (2) two solutions (3) infinite (4) unique

29. GCD of any two prime numbers is _____

(1) -1 (2) 0 (3) 1 (4) 2

30. The GCD of $x^4 - y^4$ and $x^2 - y^2$ is

(1) $x^4 - y^4$ (2) $x^2 - y^2$ (3) $(x+y)^2$ (4) $(x+y)^4$

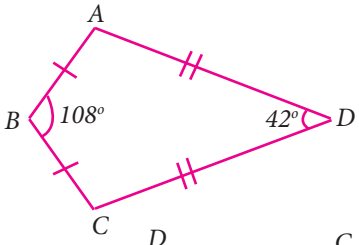
4 . G E O M E T R Y

1. The exterior angle of a triangle is equal to the sum of two

(1) Exterior angles angles (2) Interior opposite

(3) Alternate angles (4) Interior angles

2. In the quadrilateral $ABCD$, $AB = BC$ and $AD = DC$ Measure of $\angle BCD$ is

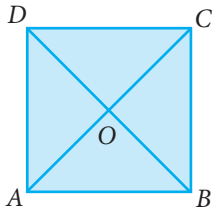


(1) 150° (2) 30°

(3) 105° (4) 72°

3. $ABCD$ is a square, diagonals AC and BD meet at O.

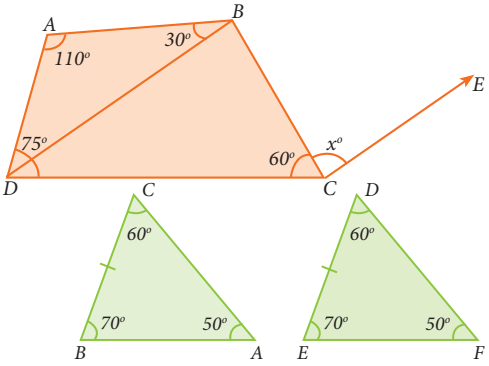
The number of pairs of congruent triangles with vertex O are



(1) 6 (2) 8

(3) 4 (4) 12

4. In the given figure $CE \parallel DB$ then the value of x^o is



(1) 45° (2) 30°

(3) 75° (4) 85°

5. The correct statement out of the following is

(1) $\Delta ABC \cong \Delta DEF$ (2) $\Delta ABC \cong \Delta DEF$

(3) $\Delta ABC \cong \Delta FDE$ (4) $\Delta ABC \cong \Delta FED$

6. If the diagonal of a rhombus are equal, then the rhombus is a

(1) Parallelogram but not a rectangle

(2) Rectangle but not a square

(3) Square

(4) Parallelogram but not a square

7. If bisectors of $\angle A$ and $\angle B$ of a quadrilateral $ABCD$ meet at O, then $\angle AOB$ is

(1) $\angle C + \angle D$ (2) $\frac{1}{2}(\angle C + \angle D)$

(3) $\frac{1}{2}\angle C + \frac{1}{3}\angle D$ (4) $\frac{1}{3}\angle C + \frac{1}{2}\angle D$

8. The interior angle made by the side in a parallelogram is 90° then the parallelogram is a

(1) rhombus (2) rectangle (3) trapezium (4) kite

9. Which of the following statement is correct?

(1) Opposite angles of a parallelogram are not equal.
(2) Adjacent angles of a parallelogram are complementary.
(3) Diagonals of a parallelogram are always equal.
(4) Both pairs of opposite sides of a parallelogram are always equal.

10. The angles of the triangle are $3x-40$, $x+20$ and $2x-10$ then the value of x is

(1) 40° (2) 35° (3) 50° (4) 45°

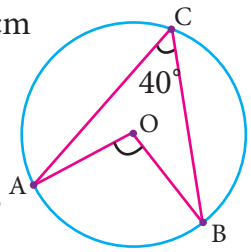
11. PQ and RS are two equal chords of a circle with centre O such that $\angle POQ = 70°$, then $\angle ORS =$

(1) 60° (2) 70° (3) 55° (4) 80°

12. A chord is at a distance of 15cm from the centre of the circle of radius 25cm. The length of the chord is

(1) 25cm (2) 20cm (3) 40cm (4) 18cm

13. In the figure, O is the centre of the circle and $\angle ACB = 40°$ then $\angle AOB =$

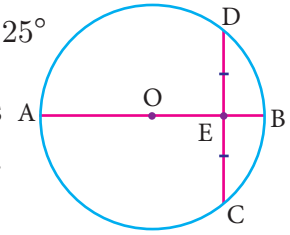


(1) 80° (2) 85° (3) 70° (4) 65°

14. In a cyclic quadrilaterals $ABCD$, $\angle A = 4x$, $\angle C = 2x$ the value of x is

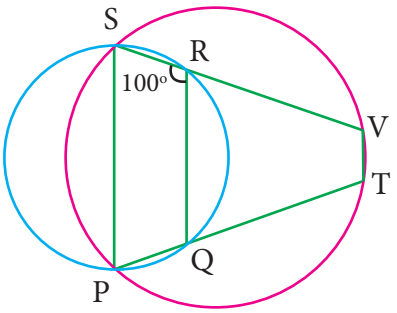
(1) 30° (2) 20° (3) 15° (4) 25°

15. In the figure, O is the centre of a circle and diameter AB bisects the chord CD at a point E such that $CE=ED=8$ cm and $EB=4$cm. The radius of the circle is



(1) 8cm (2) 4cm (3) 6cm (4)10cm

16. In the figure, $PQRS$ and $PTVS$ are two cyclic quadrilaterals, If $\angle QRS = 100°$, then $\angle TVS =$

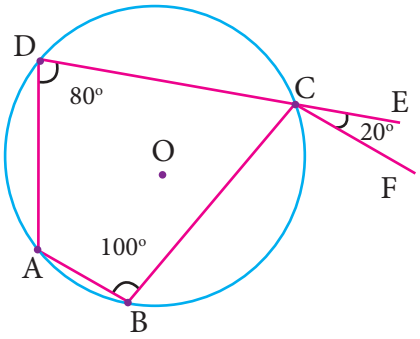


(1) 80° (2) 100° (3) 70° (4) 90°

17. If one angle of a cyclic quadrilateral is 75°, then the opposite angle is

(1) 100° (2) 105° (3) 85° (4) 90°

18. In the figure, $ABCD$ is a cyclic quadrilateral in which DC produced to E and CF is drawn parallel to AB such that $\angle ADC = 80°$ and $\angle ECF = 20°$, then $\angle BAD = ?$

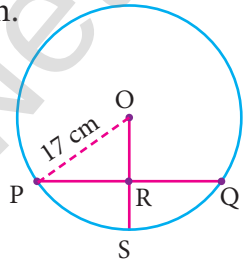


(1) $100°$ (2) $20°$ (3) $120°$ (4) $110°$

19. AD is a diameter of a circle and AB is a chord If $AD = 30$ cm and $AB = 24$ cm then the distance of AB from the centre of the circle is

(1) 10cm (2) 9cm (3) 8cm (4) 6cm.

20. In the given figure, If $OP = 17$cm, $PQ = 30$cm and OS is perpendicular to PQ, then RS is



(1) 10cm (2) 6cm
(3) 7cm (4) 9cm.

5.COORDINATE GEOMETRY

1. If the y-coordinate of a point is zero, then the point always lies _____

   (1)in the I quadrant (2) in the II quadrant (3)on x-axis (4) on y-axis

2. The points (–5, 2) and (2, –5) lie in the _____

   (1) same quadrant (2) II and III quadrant respectively
   (3) II and IV quadrant respectively (4) IV and II quadrant respectively

3. On plotting the points $O(0,0)$, $A(3, -4)$, $B(3, 4)$ and $C(0, 4)$ and joining OA, AB, BC and CO, which of the following figure is obtained?

   (1) Square (2) Rectangle (3) Trapezium (4) Rhombus

4. If $P(-1,1)$, $Q(3,-4)$, $R(1, -1)$, $S(-2, -3)$ and $T(-4, 4)$ are plotted on a graph paper, then the points in the fourth quadrant are _____

   (1) P and T (2) Q and R (3) only S (4) P and Q

5. The point whose ordinate is 4 and which lies on the y-axis is _____

   (1)(4, 0) (2) (0, 4) (3) (1, 4) (4) (4, 2)

6. The distance between the two points (2, 3) and (1, 4) is _____

   (1) 2 (2) $\sqrt{56}$ (3) $\sqrt{10}$ (4) $\sqrt{2}$

7. If the points A (2,0), B (-6,0), C (3, a–3) lie on the x-axis then the value of a is _____

   (1) 0 (2) 2 (3) 3 (4) –6

8. If (x+2, 4) = (5, y–2), then the coordinates (x,y) are _____

   (1) (7, 12) (2) (6, 3) (3) (3, 6) (4) (2, 1)

9. If Q_1, Q_2, Q_3, Q_4 are the quadrants in a Cartesian plane then $Q_2 \cap Q_3$ is _____

   (1) $Q_1 \cup Q_2$ (2) $Q_2 \cup Q_3$ (3) Null set (4) Negative x-axis.

10. The distance between the point (5, –1) and the origin is _____

    (1) $\sqrt{24}$ (2) $\sqrt{37}$ (3) $\sqrt{26}$ (4) $\sqrt{17}$

11. The coordinates of the point C dividing the line segment joining the points $P(2,4)$ and $Q(5,7)$ internally in the ratio 2:1 is

(1) $\left(\frac{7}{2},\frac{11}{2}\right)$ (2) (3,5) (3) (4,4) (4) (4,6)

12. If $P\left(\frac{a}{3},\frac{b}{2}\right)$ is the mid-point of the line segment joining $A(-4,3)$ and $B(-2,4)$ then (a,b) is

(1) (−9,7) (2) $\left(-3,\frac{7}{2}\right)$ (3) (9, −7) (4) $\left(3,-\frac{7}{2}\right)$

13. In what ratio does the point $Q(1,6)$ divide the line segment joining the points $P(2,7)$ and $R(-2,3)$

(1) 1:2 (2) 2:1 (3) 1:3 (4) 3:1

14. If the coordinates of one end of a diameter of a circle is (3,4) and the coordinates of its centre is (−3,2), then the coordinate of the other end of the diameter is

(1) (0,−3) (2) (0,9) (3) (3,0) (4) (−9,0)

15. The ratio in which the x-axis divides the line segment joining the points $A(a_1,b_1)$ and $B(a_2,b_2)$ is

(1) $b_1 : b_2$ (2) $-b_1 : b_2$ (3) $a_1 : a_2$ (4) $-a_1 : a_2$

16. The ratio in which the x-axis divides the line segment joining the points (6,4) and (1, −7) is

(1) 2:3 (2) 3:4 (3) 4:7 (4) 4:3

17. If the coordinates of the mid-points of the sides AB, BC and CA of a triangle are (3,4), (1,1) and (2,−3) respectively, then the vertices A and B of the triangle are

(1) (3,2), (2,4) (2) (4,0), (2,8) (3) (3,4), (2,0) (4) (4,3), (2,4)

18. The mid-point of the line joining $(-a,2b)$ and $(-3a,-4b)$ is

(1) $(2a,3b)$ (2) $(-2a,-b)$ (3) $(2a,b)$ (4) $(-2a,-3b)$

19. In what ratio does the y-axis divides the line joining the points (−5,1) and (2,3) internally

(1) 1:3 (2) 2:5 (3) 3:1 (4) 5:2

20. If (1,−2), (3,6), $(x,10)$ and (3,2) are the vertices of the parallelogram taken in order, then the value of x is

(1) 6 (2) 5 (3) 4 (4) 3

6.TRIGONOMETRY

1. If $\sin 30° = x$ and $\cos 60° = y$, then $x^2 + y^2$ is
   (1) $\frac{1}{2}$ (2) 0 (3) $\sin 90°$ (4) $\cos 90°$

2. If $\tan\theta = \cot 37°$, then the value of θ is
   (1) 37° (2) 53° (3) 90° (4) 1°

3. The value of $\tan 72° \tan 18°$ is
   (1) 0 (2) 1 (3) 18° (4) 72°

4. The value of $\frac{2\tan 30°}{1-\tan^2 30°}$ is equal to
   (1) $\cos 60°$ (2) $\sin 60°$ (3) $\tan 60°$ (4) $\sin 30°$

5. If $2\sin 2\theta = \sqrt{3}$, then the value of θ is
   (1) 90° (2) 30° (3) 45° (4) 60°

6. The value of $3\sin 70° \sec 20° + 2\sin 49° \sec 51°$ is
   (1) 2 (2) 3 (3) 5 (4) 6

7. The value of $\frac{1-\tan^2 45°}{1+\tan^2 45°}$ is
   (1) 2 (2) 1 (3) 0 (4) $\frac{1}{2}$

8. The value of $\text{cosec}(70° + \theta) - \sec(20° - \theta) + \tan(65° + \theta) - \cot(25° - \theta)$ is
   (1) 0 (2) 1 (3) 2 (4) 3

9. The value of $\tan 1° \tan 2° \tan 3° \ldots \tan 89°$ is
   (1) 0 (2) 1 (3) 2 (4) $\frac{\sqrt{3}}{2}$

10. Given that $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{1}{2}$, then the value of $\alpha + \beta$ is
    (1) 0° (2) 90° (3) 30° (4) 60°

7.Mensuration

1. The semi-perimeter of a triangle having sides 15 *cm*, 20 *cm* and 25 *cm* is
   (1) 60 *cm* (2) 45 *cm* (3) 30 *cm* (4) 15 *cm*

2. If the sides of a triangle are 3 *cm*, 4 *cm* and 5 *cm*, then the area is
   (1) 3 cm^2 (2) 6 cm^2 (3) 9 cm^2 (4) 12 cm^2

3. The perimeter of an equilateral triangle is 30 *cm*. The area is
   (1) $10\sqrt{3}$ cm^2 (2) $12\sqrt{3}$ cm^2 (3) $15\sqrt{3}$ cm^2 (4) $25\sqrt{3}$ cm^2

4. The lateral surface area of a cube of side 12 *cm* is
   (1) 144 cm^2 (2) 196 cm^2 (3) 576 cm^2 (4) 664 cm^2

5. If the lateral surface area of a cube is 600 cm^2, then the total surface area is
   (1) 150 cm^2 (2) 400 cm^2 (3) 900 cm^2 (4) 1350 cm^2

6. The total surface area of a cuboid with dimension 10 *cm* × 6 *cm* × 5 *cm* is
   (1) 280 cm^2 (2) 300 cm^2 (3) 360 cm^2 (4) 600 cm^2

7. If the ratio of the sides of two cubes are 2:3, then ratio of their surface areas will be
   (1) 4:6 (2) 4:9 (3) 6:9 (4) 16:36

8. The volume of a cuboid is 660 cm^3 and the area of the base is 33 cm^2. Its height is
   (1) 10 *cm* (2) 12 *cm* (3) 20 *cm* (4) 22 *cm*

9. The capacity of a water tank of dimensions 10 *m* × 5 *m* × 1.5 *m* is
   (1) 75 litres (2) 750 litres (3) 7500 litres (4) 75000 litres

10. The number of bricks each measuring 50 *cm* × 30 *cm* × 20 *cm* that will be required to build a wall whose dimensions are 5 *m* × 3 *m* × 2 *m* is
    (1) 1000 (2) 2000 (3) 3000 (4) 5000

8.Statistics

1. Let m be the mid point and b be the upper limit of a class in a continuous frequency distribution. The lower limit of the class is

(1) $2m - b$ (2) $2m+b$ (3) $m-b$ (4) $m-2b$.

2. The mean of a set of seven numbers is 81. If one of the numbers is discarded , the mean of the remaining numbers is 78 . The value of discarded number is

(1) 101 (2) 100 (3) 99 (4) 98.

3. A particular observation which occurs maximum number of times in a given data is called its

(1) Frequency (2) range (3) mode (4) Median.

4. For which set of numbers do the mean, median and mode all have the same values?

(1) 2,2,2,4 (2) 1,3,3,3,5 (3) 1,1,2,5,6 (4) 1,1,2,1,5.

5. The algebraic sum of the deviations of a set of n values from their mean is

(1) 0 (2) n-1 (3) n (4) n+1.

6. The mean of a,b,c,d and e is 28 . If the mean of a, c and e is 24 , then mean of b and d is_

(1) 24 (2) 36 (3) 26 (4) 34

7. If the mean of five observations x, x+2 , x+4 , x+6 , x+8 , is 11 , then the mean of first three observations is

(1) 9 (2) 11 (3) 13 (4) 15.

8. The mean of 5, 9, x, 17, and 21 is 13, then find the value of x

(1) 9 (2) 13 (3) 17 (4) 21

9. The mean of the square of first 11 natural numbers is

(1) 26 (2) 46 (3) 48 (4) 52.

10. The mean of a set of numbers is $\bar{X}$. If each number is multiplied by z, the mean is

(1) $\bar{X}+z$ (2) $\bar{X}$ - z (3) $z\ \bar{X}$ (4) $\bar{X}$

9.Probability

1. A number between 0 and 1 that is used to measure uncertainty is called

   (1) Random variable (2) Trial (3) Simple event (4) Probability

2. Probability lies between

   (1) −1 and +1 (2) 0 and 1 (3) 0 and n (4) 0 and ∞

3. The probability based on the concept of relative frequency theory is called

   (1) Empirical probability (2) Classical probability
   (3) Both (1) and (2) (4) Neither (1) nor (2)

4. The probability of an event cannot be

   (1) Equal to zero (2) Greater than zero (3) Equal to one (4) Less than zero

5. The probability of all possible outcomes of a random experiment is always equal to

   (1) One (2) Zero (3) Infinity (4) Less than one

6. If A is any event in S and its complement is A' then, $P(A')$ is equal to

   (1) 1 (2) 0 (3) $1-A$ (4) $1-P(A)$

7. Which of the following cannot be taken as probability of an event?

   (1) 0 (2) 0.5 (3) 1 (4) −1

8. A particular result of an experiment is called

   (1) Trial (2) Simple event (3) Compound event (4) Outcome

9. A collection of one or more outcomes of an experiment is called

   (1) Event (2) Outcome (3) Sample point (4) None of the above

10. The six faces of the dice are called equally likely if the dice is

    (1) Small (2) Fair (3) Six-faced (4) Round

ANSWERS SET LANGUAGE

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

REAL NUMBERS

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

ALGEBRA

1. (4) 2. (3) 3. (4) 4. (4) 5. (2) 6. (1) 7. (4) 8. (4) 9. (4) 10. (3)
11. (2) 12. (3) 13. (3) 14. (2) 15. (2) 16. (3) 17. (3) 18. (4) 19. (2) 20. (3)21. (2) 22. (4) 23. (3) 24. (2) 25. (1) 26. (2) 27. (3) 28. (1) 29. (3) 30. (2)

GEOMETRY

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

COORDINATE

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

TRIGONOMETRY

1. (1) 2. (2) 3. (2) 4. (3) 5. (2) 6. (3) 7. (3) 8. (1) 9. (2) 10. (2)

MENSURATION

1. (3) 2. (2) 3. (4) 4. (3) 5. (3) 6. (1) 7. (2) 8. (3) 9. (4) 10. (1)

STATISTICS

1. (1) 2. (3) 3. (3) 4. (2) 5. (1) 6. (4) 7. (1) 8. (2) 9. (2) 10. (3)

PROBABILITY

1. (4) 2. (2) 3. (1) 4. (4) 5. (1) 6. (4) 7. (4) 8. (4) 9. (1) 10. (2)