Sample Paper 8

Time : 90 Minutes **Max Marks : 40**

General Instructions

1. *The question paper contains three parts A, B and C.*
2. *Section A consists of 20 quesions of 1 mark each. Any 16 quesitons are to be attempted.*
3. *Section B consists of 20 quersions of 1 mark each. Any 16 quesions are to be attempted.*
4. *Section C consists of 10 quesions based two Case Studies. Attempt any 8 questions.*
5. *There is no negative marking.*

SECTION-A

Section A consists of 20 questions of 1 mark each. Any 16 quesions are to be attempted.

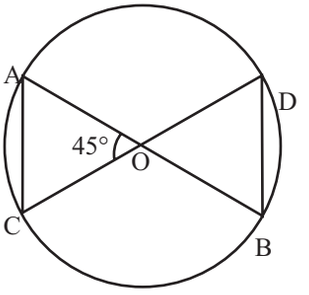
1. A boat goes 12 km. upstream and 40 km downstream in 8 hours. It can go 16 km upstream and 32 km downstream in the same time. Find the speed of the boat in still water and the speed of the stream.

(a) 4 km/hr, 5 km/hr (b) 3 km/hr, 1 km/hr (c) 6 km/hr, 2 km/hr (d) 7 km/hr, 2 km/hr

2. Find the distance between the points $\left(\sqrt{3}+1,\sqrt{2}-1\right)$ and $\left(\sqrt{3}-1,\sqrt{2}+1\right)$.

(a) $\sqrt{3}$ (b) $2\sqrt{3}$ (c) $\sqrt{2}$ (d) $2\sqrt{2}$

3. If in fig. O is the point of intersection of two chords AB and CD such that OB = OD, then triangles OAC and ODB are



(a) equilateral but not similar (b) isosceles but not similar

(c) equilateral and similar (d) isosceles and similar

4. If the H.C.F of 210 and 55 is expressible in the form 210 × 5 + 55y, find y.

(a) 20 (b) 19 (c) – 91 (d) – 19

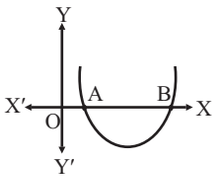
5. A child has a die whose six faces show the number as given below:

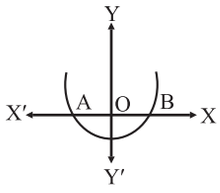
1	2	2	3	4	6

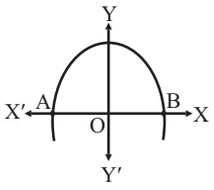
The die is thrown once. What is the probability of getting an even number?

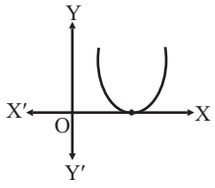
(a) $\frac{1}{6}$ (b) $\frac{2}{3}$ (c) 0 (d) 3

6. Which of the following is/are not graph of a quadratic polynomial ?

(a) 

(b) 

(c) 

(d) 

7. The two opposite vertices of a square are (–1, 2) and (3, 2). Find the co-ordinates of the other two vertices.

(a) (1, 0), (1, 2) (b) (1, 0), (2, 1) (c) (1, 4), (1, 0) (d) (4, 1), (1, 0)

8. I. If $3x - 5y = -1$ and $x - y = -1$, then $x = -2, y = -1$

II. $2x + 3y = 9, 3x + 4y = 5 \Rightarrow x = -21, y = 17$

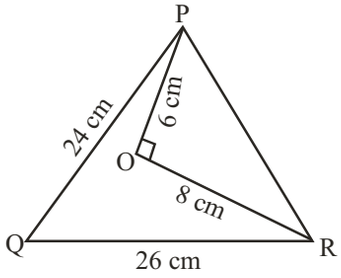
III. $\frac{2x}{a} + \frac{y}{b} = 2, \frac{x}{a} - \frac{y}{b} = 4 \Rightarrow x = 2a, y = 2b$

Which is true?

(a) I (b) II (c) III (d) None of these

9. In figure given below , O is a point inside

ΔPQR such that $\angle POR = 90°$, OP = 6 cm and OR = 8 cm. If PQ = 24 cm, QR = 26 cm. Then



(a) $\angle QRP = 90°$ (b) $\angle PRQ = 90°$ (c) $\angle QPR = 90°$ (d) ΔPQR is an isosceles

10. If the ratio of the areas of the two circles is 25 : 16, then the ratio of their circumferences is

(a) $\frac{25}{16}$ (b) $\frac{4}{5}$ (c) $\frac{5}{4}$ (d) $\frac{500}{625}$

11. If $\frac{p}{q}$ is a terminating decimal, what can you say about q ?

(a) q must be in the form 2^n

(b) q must be in the form 5^m

(c) q must be in the form $2^n.5^m$

(d) q must be in the form $2^n.5^m$, where n and m are non negative integers.

12. Identify the ratio in which the line joining (4, 5) and (– 10, 2) is cut by the Y-axis.

(a) – 5 : 2 (b) 3 : 5 (c) – 5 : 3 (d) 2 : 5

13. From a normal pack of cards, a card is drawn at random, find the probability of getting a jack or a king.

(a) $\frac{7}{52}$ (b) $\frac{4}{13}$ (c) $\frac{2}{13}$ (d) $\frac{3}{13}$

14. The graph of $y = x^2 - 6x + 9$ is :

(a) a parabola open upward (b) a parabola open downward

(c) a straight line (d) None of these

15. Identify the incorrect statement.

(a) A right angled triangle may have 1, 1 and 2 as its sides.

(b) 1, 2, $\sqrt{3}$ are the sides of a right angled triangle.

(c) The ratio of corresponding sides of two squares whose areas are in the ratio 4 : 1 is 2 : 1

(d) 17, 8 and 15 are the sides of a right angled triangle.

16. Two dice are thrown at a time, then find the probability that the difference of the numbers shown on the dice is 1.

(a) $\frac{3}{16}$ (b) $\frac{5}{18}$ (c) $\frac{7}{36}$ (d) $\frac{7}{18}$

17. Which of the following is not a rational number?

(a) $\sqrt{2}$ (b) $\sqrt{4}$ (c) $\sqrt{9}$ (d) $\sqrt{16}$

18. If the sector of a circle of diameter 14cm subtends an angle of 30° at the centre, then its area is

(a) 49π (b) $\frac{49\pi}{12}$ (c) $\frac{242}{3\pi}$ (d) $\frac{121}{\pi}$

19. What is a system of simultaneous equations called if it has no solution?

(a) Consistent system (b) Independent system

(c) Inconsistent system (d) Dependent system

20. Find the probability for a randomly selected number of 1, 2, 3, 4,.....25 to be a prime number.

(a) $\frac{4}{25}$ (b) $\frac{7}{25}$ (c) $\frac{8}{25}$ (d) $\frac{9}{25}$

SECTION-B

Section B consists of 20 questions of 1 mark each. Any 16 quesions are to be attempted.

21. If α and β are the zeroes of the quadratic polynomial $f(x) = ax^2 + bx + c$ then evaluate $\frac{1}{\alpha^3} + \frac{1}{\beta^3}$.

(a) $a^2 - b^2$ (b) $\frac{3abc - b^3}{c^3}$ (c) $\frac{-b}{a}$ (d) $\frac{c}{a}$

22. Find the chance that a non-leap year contains 53 Saturdays.

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{5}{7}$

23. What is the value of 'x' if (4, 3) and (x, 5) are points on the circumference of a circle with centre O(2, 3)?

(a) 4 (b) 2 (c) –2 (d) 0

24. Which of the following is not correct?

(a) $\frac{1}{7}$ is rational having non-terminating is repeating decimal fraction.

(b) $\frac{11}{30}$ is rational non-terminating repeating decimal.

(c) $\frac{31}{91}$ is rational having non-terminating repeating decimal.

(d) $\frac{13}{125}$ is rational having non-terminating repeating decimal.

25. In ΔABC, $\angle B = 90°$ and D is the midpoint of BC. Then

(a) $AC^2 = AD^2 + 3CD^2$ (b) $AC^2 + AD^2 = CD^2$

(c) $3AC^2 = AD^2 + CD^2$ (d) $AD^2 = CD^2 = 3AC^2$

26. Solve for x and y : $\frac{3}{x} + \frac{4}{y} = 1$; $\frac{4}{x} + \frac{2}{y} = \frac{11}{12}$

(a) x = 1, y = 2 (b) x = 6 , y = 8 (c) x = 4, y = 5 (d) x = 7, y = 3

27. Which of the following statement is/are not correct?

(a) A chord divides the interior of a circle into two parts.
(b) An arc of a circle whose length is less than that of a semicircle of the same circle is a called a minor arc.
(c) Circles having the same centre but different radii are called concentric circles.
(d) A line segment joining any two points of a circle is called an arc.

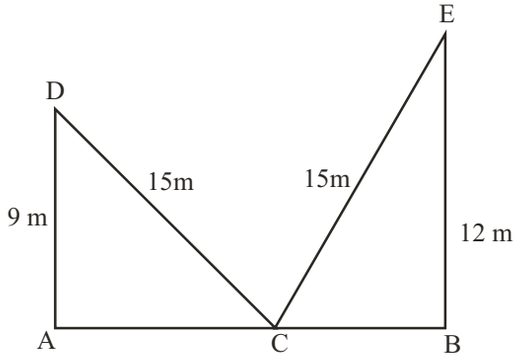
28. When two dice are thrown, find the probability of getting a number always greater than 4 on the second dice.

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{3}{5}$ (d) $\frac{2}{5}$

29. Find α and β if x + 1 and x + 2 are factors of p (x) = $x^3 + 3x^2 - 2\alpha x + \beta$

(a) 3, –1 (b) –1, 0 (c) 0, –3 (d) 5, 6

30. A ladder 15 m long reaches a window which is 9 m above the ground on one side of the street. Keeping its foot at the same point, the ladder is turned to the other side of the street to reach a window 12 m high. Find the width of the street.



(a) 21 m (b) 18 m (c) 22 m (d) 12 m

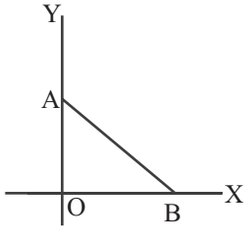
31. If a pair of linear equations is inconsistent, then the lines will be

(a) parallel (b) always coincident (c) intersecting (d) coincident

32. If ABC and EBC are two equilateral triangles such that D is mid-point of BC, then the ratio of the areas of triangles ABC and BDE is

(a) 2 : 1 (b) 1 : 2 (c) 1 : 4 (d) 4 : 1

33. If the mid-point of the line segment AB (shown in the adjoining figure) is (4, –3), then the coordinates of A and B are



(a) (8, 0) and (– 6, 0) (b) (8, 0) and (0, – 6)
(c) (0, 8) and (– 6, 0) (d) (0, 8) and (0, – 6)

34. For what value of 'x' does 6^x end with 5?

(a) 0 (b) 1 (c) 5 (d) Never ends with 5

35. Which of the following is/are not correct?

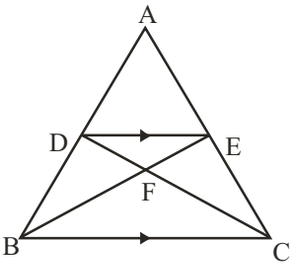
(a) Area of a circle with radius 6 cm, if angle of sector is 60°, is $\frac{132}{14}$ cm^2.

(b) If *a* chord of circle of radius 14 cm makes an angle of 60° at the centre of the circle, then area of major sector is 512.87 cm^2.

(c) The ratio between the circumference and area of a circle of radius 5 cm is 2 : 5.

(d) Area of a circle whose radius is 6 cm, when the length of the arc is 22 cm, is 66 cm^2.

36. In the given figure, DE || BC and AD : DB = 5 : 4 then ar (DDFE) : ar(DCFB).



(a) 25 : 81 (b) 5 : 81 (c) 81 : 25 (d) 22 : 88

37. If $x = \frac{4}{3}$ is a root of the polynomial f (x) = $6x^3 - 11x^2 + kx - 20$, then find the value of k.

(a) 10 (b) 19 (c) – 5 (d) 3

38. For what values of *k*, do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ represent coincident lines?

(a) solution of $3k - 9 = 0$ (b) solution of $2k - 8 = 0$

(c) 2 (d) 3

39. A line intersects the y-axis and x-axis at the points P and Q respectively. If (2, –5) is the mid point of PQ, then the coordinates of P and Q are respectively

(a) (0, –5) and (2, 0) (b) (0, 10) and (–4, 0)

(c) (0, 4) and (–10, 0) (d) (4, 0) and (0, 10)

40. The decimal expansion of $\frac{21}{45}$ is :

(a) terminating

(b) non-terminating and repeating

(c) non-terminating and non-repeating

(d) none of these

SECTION-C

Case Study Based Questions:

Section C consists of 10 quesions of 1 mark each. Any 8 quesions are to be attempted.

Q 41. - Q 45 are based on case study-I

Case Study-I

Two unbiased coins are tossed simultaneously.

The word 'unbiased' means each outcome is equally likely to occure.

41. The probability of getting two heads is

(a) $\frac{1}{2}$ (b) 1 (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

42. The probability of getting one tail is

(a) $\frac{1}{2}$ (b) 1 (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

43. The probability of getting no head is

(a) $\frac{1}{2}$ (b) 1 (c) $\frac{1}{3}$ (d) $\frac{1}{4}$

44. The probability of getting at most one head.

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{3}{4}$ (d) 1

45. The probability of getting at least one head

(a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{9}{2}$ (d) 1

Q 46 - Q 50 are based on case study-II

Case Study-II

A horse is tied to a peg at one corner of a square shaped grass field of side 15m. (Use $\pi = 3.14$)

46. If rope of horse is 5m long then the area of that part of the field in which the horse can graze is :

(a) $19.625m^2$ (b) $29.625m^2$ (c) $19\ m^2$ (d) $18.625m^2$

47. If rope of horse 10 m long then the area of that part of the field in which the horse can graze is:

(a) $68.5m^2$ (b) $78.5m^2$ (c) $58.5m^2$ (d) $73.5m^2$

48. The increase in the grazing area if the rope were 10m long instead of 5m.

(a) $58.875m^2$ (b) $58m^2$ (c) $57.875m^2$ (d) $68.87\ m^2$

49. If rope of horse is 5 m long then the area of that part of the field in which the horse can not graze is:

(a) $204.37m^2$ (b) $200.37m^2$ (c) $205.37m^2$ (d) $205m^2$

50. If rope of horse 10m long then the area of that part of the field in which the horse can not graze is :

(a) $146.5\ m^2$ (b) $205.37m^2$ (c) $46.5m^2$ (d) $146\ m^2$