

Sample Paper

3

Time : 90 Minutes

Max Marks : 40

General Instructions

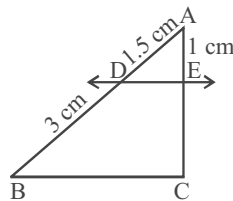
1. The question paper contains three parts A, B and C.
2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.
4. Section C consists of 10 questions based two Case Studies.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

SECTION-A

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

1. Two numbers differ by 3 and their product is 54. Find the numbers.
(a) 9 and 6 (b) -9 and -6
(c) Both (a) and (b) (d) 9 and -4
2. $\Delta ABC \sim \Delta PQR$ and $\frac{\text{area } \Delta ABC}{\text{area } \Delta PQR} = \frac{16}{9}$. If PQ = 18 cm and BC = 12 cm. then AB and QR are respectively
(a) 9 cm, 24 cm (b) 24 cm, 9 cm
(c) 32 cm, 6.75 cm (d) 13.5 cm, 16 cm
3. What is the maximum value of $\frac{1}{\sec \theta}$?
(a) 0 (b) 1
(c) -1 (d) -2
4. If the zeros of the polynomial $f(x) = k^2x^2 - 17x + k + 2$, ($k > 0$) are reciprocal of each other, then the value of k is
(a) 2 (b) -1
(c) -2 (d) 1
5. If the value of a quadratic polynomial p(x) is 0 only at $x = -1$ and $p(-2) = 2$, then the value of p(2) is
(a) 18 (b) 9
(c) 6 (d) 3
6. The probability of raining on day 1 is 0.2 and on day 2 is 0.3. The probability of raining on both the days is
(a) 0.2 (b) 0.1 (c) 0.06 (d) 0.25
7. Which of the following statement is false?
(a) All isosceles triangles are similar.
(b) All quadrilateral triangles are similar.
(c) All circles are similar.
(d) None of the above

8. A race track is in the form of a ring whose inner and outer circumference are 437m and 503m respectively. The area of the track is
 (a) 66 sq. cm (b) 4935 sq. cm (c) 9870 sq. cm (d) None of these
9. Which of the following will have a terminating decimal expansion?
 (a) $\frac{77}{210}$ (b) $\frac{23}{30}$ (c) $\frac{125}{441}$ (d) $\frac{23}{8}$
10. I. The L.C.M. of x and 18 is 36.
 II. The H.C.F. of x and 18 is 2.
 What is the number x ?
 (a) 1 (b) 2 (c) 3 (d) 4
11. Which of the following cannot be the probability of an event?
 (a) $\frac{2}{3}$ (b) $-\frac{1}{5}$ (c) 15% (d) 0.7
12. P, Q, R are three collinear points. The coordinates of P and R are (3, 4) and (11, 10) respectively and PQ is equal to 2.5 units. Coordinates of Q are
 (a) (5, 11/2) (b) (11, 5/2) (c) (5, -11/2) (d) (-5, 11/2)
13. A number lies between 300 and 400. If the number is added to the number formed by reversing the digits, the sum is 888 and if the unit's digit and the ten's digit change places, the new number exceeds the original number by 9. Then, the number is
 (a) 339 (b) 341 (c) 378 (d) 345
14. A fraction becomes 4 when 1 is added to both the numerator and denominator and it becomes 7 when 1 is subtracted from both the numerator and denominator. The numerator of the given fraction is
 (a) 2 (b) 3 (c) 5 (d) 15
15. The sum of the areas of two circles, which touch each other externally, is 153π . If the sum of their radii is 15, then the ratio of the larger to the smaller radius is
 (a) 4 : 1 (b) 2 : 1 (c) 3 : 1 (d) None of these
16. The zeroes of the polynomial $x^2 - 3x - m(m + 3)$ are
 (a) $m, m + 3$ (b) $-m, m + 3$
 (c) $m, -(m + 3)$ (d) $-m, -(m + 3)$
17. If a and b are zeroes of the polynomial $2t^2 - 4t + 3$, then the value of $a^2b + ab^2$ is :
 (a) $\frac{3}{4}$ (b) 2 (c) 3 (d) 4
18. In the given figure, $DE \parallel BC$. The value of EC is



- (a) 1.5 cm (b) 3 cm (c) 2 cm (d) 1 cm
19. At present ages of a father and his son are in the ratio 7 : 3, and they will be in the ratio 2 : 1 after 10 years. Then the present age of father (in years) is
 (a) 42 (b) 56 (c) 70 (d) 77

20. The probability that a two digit number selected at random will be a multiple of '3' and not a multiple of '5' is

- (a) $\frac{2}{15}$ (b) $\frac{4}{15}$ (c) $\frac{1}{15}$ (d) $\frac{4}{90}$

SECTION-B

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

21. Solve $2x^2 + 3y^2 = 35$; $\frac{x^2}{2} + \frac{y^2}{3} = 5$

- (a) $x = \pm 4, y = \pm 9$ (b) $x = 3, y = 4$
 (c) $x = 1, y = 1$ (d) $x = \pm 2, y = \pm 3$

22. In $\triangle ABC$, E divides AB in the ratio 3 : 1 and F divides BC in the ratio 3 : 2, then the ratio of areas of $\triangle BEF$ and $\triangle ABC$ is

- (a) 3 : 5 (b) 3 : 10
 (c) 1 : 5 (d) 3 : 20

23. Given that $\sin \theta + 2 \cos \theta = 1$, then $2 \sin \theta - \cos \theta =$

- (a) 0 (b) 2
 (c) 1 (d) None of these

24. If α and β are the zeroes of the polynomial

$f(x) = x^2 - 5x + k$ such that $\alpha - \beta = 1$, the value of K is-

- (a) 12 (b) 6
 (c) 4 (d) 1

25. If $x + y = 1$, then $x^3 + y^3 + 3xy = \dots\dots\dots$

- (a) 0 (b) 1
 (c) 2 (d) None of these

26. The zeroes of the polynomial are

$p(x) = x^2 - 10x - 75$

- (a) 5, -15 (b) 5, 15 (c) 15, -5 (d) -5, -15

27. If $\operatorname{cosec} x - \cot x = \frac{1}{3}$, where $x \neq 0$, then the value of $\cos^2 x - \sin^2 x$ is

- (a) $\frac{16}{25}$ (b) $\frac{9}{25}$ (c) $\frac{8}{25}$ (d) $\frac{7}{25}$

28. The points (7, 2) and (-1, 0) lie on a line

- (a) $7y = 3x - 7$ (b) $4y = x + 1$
 (c) $y = 7x + 7$ (d) $x = 4y + 1$

29. X's salary is half that of Y's. If X got a 50% rise in his salary and Y got 25% rise in his salary, then the percentage increase in combined salaries of both is

- (a) 30 (b) $33\frac{1}{3}$ (c) $37\frac{1}{2}$ (d) 75

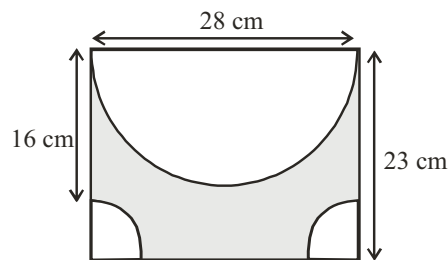
30. The perimeter of a sector of a circle with central angle 90° is 25 cm. Then the area of the minor segment of the circle is.

- (a) 14 cm^2 (b) 16 cm^2 (c) 18 cm^2 (d) 24 cm^2

31. The perimeters of two similar triangles ABC and PQR are respectively 36 cm and 24 cm. If $PQ = 10$ cm, then $AB =$

- (a) 10 cm (b) 20 cm (c) 25 cm (d) 15 cm

32. The least number which when divided by 15, leaves a remainder of 5, when divided by 25, leaves a remainder of 15 and when divided by 35, leaves a remainder of 25, is
 (a) 515 (b) 525
 (c) 1040 (d) 1050
33. Out of one digit prime numbers, one number is selected at random. The probability of selecting an even number is
 (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{4}{9}$ (d) $\frac{2}{5}$
34. A can do a piece of work in 24 days. If B is 60% more efficient than A , then the number of days required by B to do the twice as large as the earlier work is
 (a) 24 (b) 36 (c) 15 (d) 30
35. If n is an even natural number, then the largest natural number by which $n(n+1)(n+2)$ is divisible is
 (a) 6 (b) 8 (c) 12 (d) 24
36. The least number which is a perfect square and is divisible by each of 16, 20 and 24 is
 (a) 240 (b) 1600
 (c) 2400 (d) 3600
37. It is given that $\triangle ABC \sim \triangle PQR$ with $\frac{BC}{QR} = \frac{1}{3}$. Then $\frac{\text{ar}(\triangle PQR)}{\text{ar}(\triangle ABC)}$ is equal to
 (a) 9 (b) 3 (c) $\frac{1}{3}$ (d) $\frac{1}{9}$
38. The figure given shows a rectangle with a semi-circle and 2 identical quadrants inside it.



What is the shaded area of the figure? (Use $\pi = \frac{22}{7}$)

- (a) 363 cm^2 (b) 259 cm^2 (c) 305 cm^2 (d) 216 cm^2
39. The value of k for which the system of linear equations $x + 2y = 3$, $5x + ky + 7 = 0$ is inconsistent is
 (a) $-\frac{14}{3}$ (b) $\frac{2}{5}$
 (c) 5 (d) 10
40. The probability of getting a number greater than 2 in throwing a die is
 (a) $\frac{2}{3}$ (b) $\frac{1}{3}$
 (c) $\frac{4}{3}$ (d) $\frac{1}{4}$

SECTION-C

Case Study Based Questions:

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

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

Case Study-I

To enhance the reading skills of grade X students, the school nominates you and two of your friends to set up a class library. There are two sections-section A and section B of grade X. There are 64 students in section A and 72 students in section B.

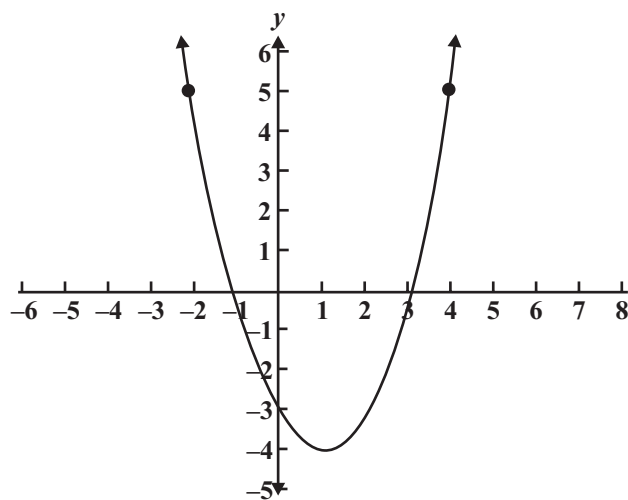


41. What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of Section A or Section B?
 (a) 144 (b) 128 (c) 576 (d) 272
42. If the product of two positive integers is equal to the product of their HCF and LCM is true then, the HCF (64, 72) is
 (a) 2 (b) 4 (c) 6 (d) 8
43. 72 can be expressed as a product of its primes as
 (a) $2^3 \times 3^2$ (b) $2^1 \times 3^3$ (c) $2^3 \times 3^1$ (d) $2^0 \times 3^0$
44. $5 \times 13 \times 17 \times 19 + 19$ is a
 (a) Prime number (b) Composite number
 (c) Neither prime nor composite (d) None of the above
45. If p and q are positive integers such that $p = a^2b^3$ and $q = a^3b^2$, where a, b are prime numbers, then the HCF (p, q) is
 (a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3

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

Case Study-II

Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below.



46. Name the shape in which the wire is bent
(a) spiral (b) ellipse (c) linear (d) parabola
47. How many zeroes are there for the polynomial (shape of the wire)?
(a) 2 (b) 3 (c) 1 (d) 0
48. The zeroes of the polynomial are
(a) $-1, 5$ (b) $-1, 3$ (c) $3, 5$ (d) $-4, 2$
49. What will be the expression of the polynomial?
(a) $x^2 + 2x - 3$ (b) $x^2 - 2x + 3$ (c) $x^2 - 2x - 3$ (d) $x^2 + 2x + 3$
50. What is the value of the polynomial if $x = -1$?
(a) 6 (b) -18 (c) 18 (d) 0