

Sample Paper

9

Time : 90 Minutes

Max Marks : 40

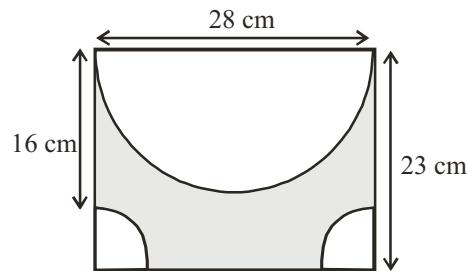
General Instructions

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. The height of mountains is found out using the idea of indirect measurements which is based on the
 - (a) principal of congruent figures
 - (b) principal of similarity of figures
 - (c) principal of equality of figures
 - (d) none of these
2. Find a quadratic polynomial, the sum and product of whose zeroes are -3 and 2 , respectively.
 - (a) $x^2 - 3x - 2$
 - (b) $x^2 + 3x + 2$
 - (c) $x^2 - 3x + 2$
 - (d) $x^2 + 3x - 2$
3. The figure given shows a rectangle with a semicircle and 2 identical quadrants inside it.

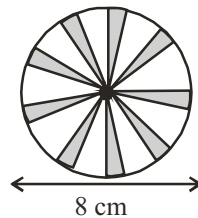


What is the shaded area of the figure?

(Use $\pi = \frac{22}{7}$)

- (a) 363 cm^2
 - (b) 259 cm^2
 - (c) 305 cm^2
 - (d) 216 cm^2
4. A lady has 25 p and 50 p coins in her purse. If in all she has 40 coins totalling ₹12.50, find the number of coins of each type she has.
 - (a) 10, 15
 - (b) 30, 10
 - (c) 20, 30
 - (d) 10, 10
 5. The points (a, a) , $(-a, -a)$ and $(-\sqrt{3}a, \sqrt{3}a)$ are the vertices of
 - (a) a scalene triangle
 - (b) a right angled triangle
 - (c) an isosceles right angled triangle
 - (d) an equilateral triangle
 6. H.C.F. of pair of co-primes is _____.
 - (a) one
 - (b) product of numbers
 - (c) common factor
 - (d) lowest common factor

7. What is the maximum value of $\frac{1}{\sec \theta}$?
- (a) 0 (b) 1 (c) -1 (d) -2
8. If in an isosceles triangle 'a' is the length of the base and 'b' is the length of one of the equal side, then its area is equal to
- (a) $a^2\sqrt{b^2 - 4b^2}$ (b) $\frac{a^2}{4}(\sqrt{4b} - a^2)$ (c) $\frac{a}{4}\sqrt{4b^2 - a^2}$ (d) $\frac{1}{4}\sqrt{a^2 + b^2}$
9. The zeroes of the polynomial are
 $p(x) = x^2 - 10x - 75$
- (a) 5, -15 (b) 5, 15 (c) 15, -5 (d) -5, -15
10. The points (-4, 0), (4, 0), (0, 3) are the vertices of a
- (a) right triangle (b) isosceles triangle (c) equilateral triangle (d) scalene triangle
11. Arjun drew a figure as shown in figure, where a circle is divided into 18 equal parts. He then shaded some of the parts. (Take $\pi = 3.14$)



Find the total area the Arjun shaded.

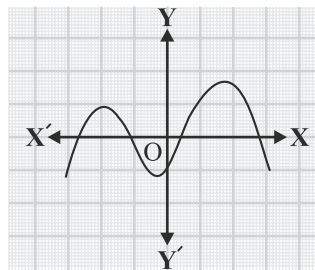
- (a) 25.12 cm² (b) 29.25 cm² (c) 36.4 cm² (d) 45.2 cm²
12. L.C.M = _____ of highest powers of all the factors.
- (a) product (b) difference (c) sum (d) none of these
13. When two dice are thrown, find the probability of getting same numbers on both dice.
- (a) $\frac{2}{3}$ (b) $\frac{1}{6}$ (c) $\frac{1}{12}$ (d) $\frac{1}{9}$
14. The points A (9, 0), B (9, 6), C (-9, 6) and D (-9, 0) are the vertices of a
- (a) square (b) rectangle (c) rhombus (d) trapezium
15. A man steadily goes 10 m due east and then 24 m due north. then his distance from the starting point is
- (a) 28 m (b) 26 m (c) 25 m (d) 18 m
16. The perimeter of a rectangle is 40 cm. The ratio of its sides is 2 : 3. Find its length and breadth.
- (a) l = 10 cm, b = 8 cm
 (b) l = 12 cm, b = 18 cm
 (c) l = 12 m, b = 8 m
 (d) l = 40 m, b = 30m
17. If $\tan A = \frac{3}{4}$ then, what is the value of $\sin A$?
- (a) - (b) 1 (c) $\frac{3}{5}$ (d) 0
18. Which of the following numbers has the terminal decimal representation?
- (a) $\frac{1}{7}$ (b) $\frac{1}{3}$ (c) $\frac{3}{5}$ (d) $\frac{17}{3}$

19. If $A(2, 2)$, $B(-4, -4)$ and $C(5, -8)$ are the vertices of a triangle, then the length of the median through vertex C is
 (a) $\sqrt{65}$ (b) $\sqrt{117}$ (c) $\sqrt{85}$ (d) $\sqrt{113}$
20. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, Find the number of blue balls in the bag.
 (a) $x = 10$ (b) $x = 12$ (c) $x = 9$ (d) $x = 8$

SECTION-B

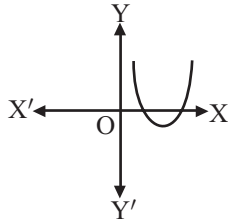
Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.

21. Two coins are tossed simultaneously. Find the probability of getting atmost one head.
 (a) $\frac{2}{3}$ (b) $\frac{1}{4}$ (c) $\frac{3}{4}$ (d) $\frac{1}{2}$
22. which of the following is true if following pair of equations has unique solution?
 $3x - 2y = -8$
 $(2m - 5)x + 7y - 6 = 0$
 (a) $m = \frac{11}{4}$ (b) $m = -\frac{11}{4}$ (c) $m \neq -\frac{11}{4}$ (d) $m \neq \frac{11}{4}$
23. A 15 metres high tower casts a shadow 24 metres long at a certain time and at the same time, a telephone pole casts a shadow 16 metres long. Find the height of the telephone pole.
 (a) 40 cm (b) 24 cm (c) 101 cm (d) 10 cm
24. The graph of $y = p(x)$ is given in fig. below, for a polynomial $p(x)$. The number of zeroes of $p(x)$, is/are

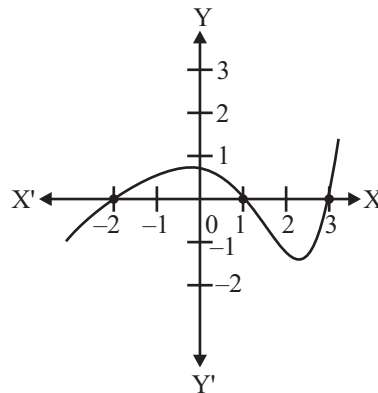


- (a) 4 (b) 3 (c) no zero (d) 2
25. Given that $\sin \theta + 2 \cos \theta = 1$, then $2 \sin \theta - \cos \theta =$
 (a) 0 (b) 2 (c) 1 (d) None of these
26. What is the condition that a system of simultaneous equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ must satisfy to have exactly one solution?
 (a) $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ (b) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (c) $\frac{a_1}{a_2} = \frac{c_1}{c_2}$ (d) $\frac{b_1}{b_2} = \frac{c_1}{c_2}$
27. 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
28. If the end points of a diameter of a circle are $A(-2, 3)$ and $B(4, -5)$, then the coordinates of its centre are
 (a) $(2, -2)$ (b) $(1, -1)$ (c) $(-1, 1)$ (d) $(-2, 2)$

29. The graph of $y = f(x)$ is shown in the figure.
What type of polynomial $f(x)$ is?



- (a) cubic (b) quadratic (c) linear (d) none of these
30. If $1 + \sin^2 \theta = 3 \sin \theta \cos \theta$, then $\tan \theta$ can have values
- (a) 4, 0 (b) $\frac{3}{4}, \frac{1}{3}$ (c) None of these (d) $1, \frac{1}{2}$
31. ABC is a right-angled triangle right angled at A. A circle is inscribed in it and the lengths of the two sides containing the right angle are 6 cm and 8 cm. Find the radius of the circle.
- (a) 1.5 cm (b) 2.2 cm (c) 3 cm (d) 2 cm
32. If $(-1)^n + (-1)^{4n} = 0$, then n is
- (a) any positive (b) any negative integer
(c) any odd natural number (d) any even natural number
33. A chord of a circle of radius 28 cm subtends an angle of 45° at the centre of the circle. Then the area of the minor segment is
- (a) 30.35 cm^2 (b) 30.81 cm^2 (c) 30.45 cm^2 (d) 30.25 cm^2
34. In what ratio is the line segment joining the points (3, 5) & (-4, 2) divided by y-axis?
- (a) 3 : 2 (b) 3 : 4 (c) 2 : 3 (d) 4 : 3
35. What is a system of simultaneous equations called if its graph has intersecting lines?
- (a) Inconsistent system (b) Consistent system
(c) Dependent system (d) Independent system
36. $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} =$
- (a) $\frac{1 + \sin \theta}{\cos \theta}$ (b) $\cos \theta + \sin \theta$ (c) $\frac{1 + \cos \theta}{\sin \theta}$ (d) $\cos^2 \theta - \sin^2 \theta$
37. Choose the zeros of the polynomial whose graph is given.



- (a) 1, -1, 2 (b) -2, 1, 3 (c) -2, 0, 3 (d) -2, 2, 3

38. In $\triangle ABC$, D is the mid point of BC and $AE \perp BC$. If $AC > AB$, then
- $AB^2 = AD^2 - BC^2 + BC^2$
 - $AB^2 = AD^2 - BC \cdot DE + \frac{1}{4}BC^2$
 - $AD^2 = AB^2 + \frac{1}{4}BC^2 - BC \cdot DE$
 - All of the above
39. Find the H.C.F. of $2^3 \times 3^2 \times 5 \times 7^4$, $2^2 \times 3^5 \times 5^2 \times 7^3$, $2^3 \times 5^3 \times 7^2$.
- 980
 - 890
 - 900
 - 809
40. 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.
- 14 cm^2
 - 16 cm^2
 - 18 cm^2
 - 24 cm^2

SECTION-C

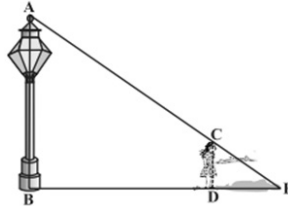
Case Study Based Questions:

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

A girl of height 90 cm is walking away from the base of a lamp-post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground.



Answer the following questions.

41. The length of her shadow after 4 seconds is :
- 4.8 m
 - 1.6 m
 - 4 m
 - 2 m
42. Distance travel by girl after 4 second is :
- 4.8 m
 - 1.6 m
 - 4 m
 - 3 m
43. Distance between their tops is :
- 4 m
 - 1.8 m
 - 5.4 m
 - 3.2 m
44. Similarity criterion of $\triangle ABE$ and $\triangle CDE$ is :
- AA
 - SSS
 - SAS
 - ASA
45. Which of the following is true ?
- $\angle B = \angle C$
 - $\angle B = \angle D$
 - $\angle A = \angle D$
 - $\angle A = 90^\circ$

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

Case Study-II

A compound angle is that which is made of up of algebraic sum of two or more angles.

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}, \quad \tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \cdot \tan B}$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

$$\cos(A - B) = \cos A \cos B + \sin A \sin B$$

46. The value of $\sin 75^\circ$ is

- (a) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (b) $\frac{3+\sqrt{3}}{2\sqrt{2}}$ (c) 0 (d) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

47. The value of $\tan 15^\circ$ is

- (a) $\frac{\sqrt{3}+1}{\sqrt{3}-1}$ (b) $\frac{2-\sqrt{3}}{2\sqrt{2}}$ (c) $\frac{\sqrt{3}-1}{\sqrt{3}+1}$ (d) $2+\sqrt{3}$

48. The value of $\tan 75^\circ$ is

- (a) $\frac{2}{2-\sqrt{3}}$ (b) $\frac{1}{1-\sqrt{3}}$ (c) 0 (d) $\frac{\sqrt{3}+1}{\sqrt{3}-1}$

49. The value of $\cos 15^\circ$ is

- (a) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ (b) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (c) $\frac{\sqrt{3}+2}{\sqrt{2}}$ (d) $\frac{\sqrt{3}-2}{\sqrt{2}}$

50. The value of $\cos 75^\circ$ is

- (a) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ (b) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (c) $\frac{\sqrt{3}+1}{\sqrt{3}-1}$ (d) $\frac{\sqrt{3}-1}{\sqrt{3}+1}$

OMR ANSWER SHEET

Sample Paper No –

- ★ Use Blue / Black Ball pen only.
- ★ Please do not make any atray marks on the answer sheet.
- ★ Rough work must not be done on the answer sheet.
- ★ Darken one circle deeply for each question in the OMR Answer sheet, as faintly darkend / half darkened circle might by rejected.

Start time : _____	End time _____	Time taken _____
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1. Name (in Block Letters)

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2. Date of Exam

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3. Candidate's Signature

SECTION-A

1. (a) (b) (c) (d) 2. (a) (b) (c) (d) 3. (a) (b) (c) (d) 4. (a) (b) (c) (d) 5. (a) (b) (c) (d) 6. (a) (b) (c) (d) 7. (a) (b) (c) (d) 8. (a) (b) (c) (d)	9. (a) (b) (c) (d) 10. (a) (b) (c) (d) 11. (a) (b) (c) (d) 12. (a) (b) (c) (d) 13. (a) (b) (c) (d) 14. (a) (b) (c) (d) 15. (a) (b) (c) (d) 16. (a) (b) (c) (d)	17. (a) (b) (c) (d) 18. (a) (b) (c) (d) 19. (a) (b) (c) (d) 20. (a) (b) (c) (d)
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SECTION-B

21. (a) (b) (c) (d) 22. (a) (b) (c) (d) 23. (a) (b) (c) (d) 24. (a) (b) (c) (d) 25. (a) (b) (c) (d) 26. (a) (b) (c) (d) 27. (a) (b) (c) (d) 28. (a) (b) (c) (d)	29. (a) (b) (c) (d) 30. (a) (b) (c) (d) 31. (a) (b) (c) (d) 32. (a) (b) (c) (d) 33. (a) (b) (c) (d) 34. (a) (b) (c) (d) 35. (a) (b) (c) (d) 36. (a) (b) (c) (d)	37. (a) (b) (c) (d) 38. (a) (b) (c) (d) 39. (a) (b) (c) (d) 40. (a) (b) (c) (d)
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SECTION-C

41. (a) (b) (c) (d) 42. (a) (b) (c) (d) 43. (a) (b) (c) (d) 44. (a) (b) (c) (d)	45. (a) (b) (c) (d) 46. (a) (b) (c) (d) 47. (a) (b) (c) (d) 48. (a) (b) (c) (d)	49. (a) (b) (c) (d) 50. (a) (b) (c) (d)
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No. of Qns. Attempted		Correct		Incorrect		Marks	
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Page for Rough Work
