SAMPLE PAPER 2

MATHEMATICS (Standard)

A Highly Simulated Practice Questions Paper
*for CBSE **Class X** (Term I) Examination*

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 on two Case Studies. Attempt any 8 questions.*
5. *There is no negative marking.*

Roll No. | | | | | |

Maximum Marks : 40
Time allowed : 90 minutes

Section A

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

1. The smallest number by which $\sqrt{27}$ should be multiplied so as to get a rational number is

(a) $\sqrt{27}$ (b) $3\sqrt{3}$ (c) $\sqrt{3}$ (d) 3

2. A quadratic polynomial can have at most _____ zeroes.

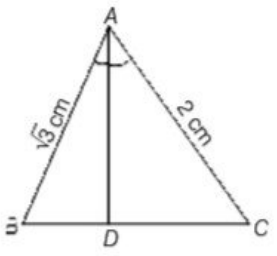
(a) 0 (b) 1
(c) 2 (d) infinite

3. The point of intersection of the coordinate axes is

(a) X-axis (b) Y-axis
(c) origin (d) (1, 2)

4. In a ΔABC, it is given that $AB = \sqrt{3}$ cm, $AC = 2$ cm and AD is the bisector of $\angle A$.

Then, $BD : DC =$



(a) 3 : 4 (b) 9 : 16 (c) 4 : 3 (d) $\sqrt{3} : 2$

5. If $x = a\sec\theta\cos\phi$, $y = b\sec\theta\sin\phi$ and $z = c\tan\theta$, then $\left(\frac{x^2}{a^2}+\frac{y^2}{b^2}\right)$ is equal to

(a) $\left(1+\frac{z^2}{c^2}\right)$ (b) $\left(1-\frac{z^2}{c^2}\right)$ (c) $\left(\frac{z^2}{c^2}-1\right)$ (d) $\frac{z^2}{c^2}$

6. A card is selected from a deck of 52 cards. The probability of its being a black face card is

(a) $\frac{3}{26}$ (b) $\frac{3}{13}$ (c) $\frac{2}{13}$ (d) $\frac{1}{2}$

7. If $A = 2n+13$, $B = n+7$, where n is a natural number then HCF of A and B is

(a) 2 (b) 1 (c) 3 (d) 4

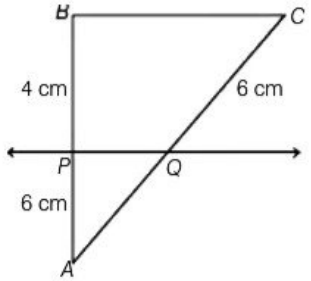
8. The sum and product of zeroes of a quadratic polynomial are respectively $\frac{1}{3}$ and -2. Then the corresponding quadratic polynomial is

(a) $4x^2 + x - 4$ (b) $x^2 - 4x - 4$
(c) $4x^2 - 4x - 1$ (d) $3x^2 - x - 6$

9. In the given figure $P(5, -3)$ and $Q(3, y)$ are the points of trisection of the line segment joining $A(4, 7)$ and $B(1, -5)$. Then y equals

(a) 2 (b) 4 (c) -4 (d) $-\frac{5}{2}$

10. In the given figure, $PQ \| BC$, find AQ.



(a) 3.5 cm (b) 4.5 cm
(c) 9 cm (d) 9.5 cm

11. If $x\cos\theta = 1$ and $\tan\theta = y$, then $x^2 - y^2$ is

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

12. A girl calculates the probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, then the total number of tickets she bought is

(a) 40 (b) 240 (c) 480 (d) 750

13. From the following rational number, which decimal expansion is terminating, is

(a) $\frac{2}{15}$ (b) $\frac{11}{160}$ (c) $\frac{17}{60}$ (d) $\frac{6}{35}$

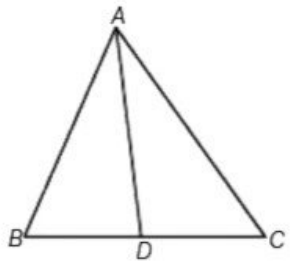
14. If zeroes α and β of a polynomial $x^2 - 7x + k$ are such that $\alpha - \beta = 1$, then the value of k is

(a) 21 (b) 12 (c) 9 (d) 8

15. If the point $P(x, y)$ is a equidistant from $L(5, 1)$ and $M(-1, 5)$, then the relation between x and y is

(a) $3x = 2y$ (b) $x = y$ (c) $2x = 3y$ (d) $3x = 6y$

16. In ΔABC it is given that, $\frac{AB}{AC} = \frac{BD}{DC}$ if $\angle B = 60°$ and $\angle C = 60°$, then $\angle BAD$ is equal to



(a) 30° (b) 40° (c) 45° (d) 50°

17. If $\sin A = \cos A$, $0° < A < 90°$, then A is equal to

(a) 30° (b) 45° (c) 60° (d) 90°

18. The probability that it will rain tomorrow is 0.3. What is the probability that it will not rain tomorrow?

(a) 0.3 (b) 0.2 (c) 0.7 (d) 0.07

19. $\frac{13}{1250}$ is a

(a) terminating decimal fraction
(b) non-terminating decimal fraction
(c) upto 2 decimal fraction
(d) None of these

20. The value of $\frac{\sin 60° + \cot 45° - \operatorname{cosec} 30°}{\sec 60° - \cos 30° + \tan 45°}$ is

(a) $\frac{4\sqrt{3} - 9}{33}$ (b) $\frac{4\sqrt{3} + 9}{33}$ (c) $\frac{9\sqrt{3} - 4}{33}$ (d) $\frac{9\sqrt{3} + 4}{33}$

Section B

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

21. The product of the HCF and LCM of the smallest prime number and the smallest composite number is

(a) 2 (b) 4 (c) 6 (d) 8

22. If α and β are zeroes of the quadratic polynomial $2x^2 + kx + 4$ and if $\alpha^2 + \beta^2 = 8$, then k is equal to

(a) $\pm 4\sqrt{3}$ (b) $\pm 3\sqrt{3}$ (c) $\pm 2\sqrt{3}$ (d) $\pm \sqrt{3}$

23. If $2x + 3y = 7$ and $(a + b)x + (2a - b)y = 21$ has infinite solutions, then

(a) $a = 1, b = 5$
(b) $a = 5, b = 1$
(c) $a = -1, b = 5$
(d) None of these

24. The coordinates of one of the points of trisection of the line segment joining the points $P(7, -2)$ and $Q(1, -5)$ are

(a) $\left(-\frac{13}{3}, -\frac{1}{3}\right)$ (b) $(3, 5)$ (c) $\left(-\frac{13}{3}, -3\right)$ (d) $(-5, -3)$

25. A piece of wire 20 cm is bent into the form of an arc of a circle subtending an angle of $60°$ at its centre, then the radius of the circle will be (in cm)

(a) $\frac{30}{\pi}$ (b) $\frac{40}{\pi}$ (c) $\frac{50}{\pi}$ (d) $\frac{60}{\pi}$

26. In an isosceles triangle PQR, if $PR = QR$ and $PQ^2 = 2PR^2$, then $\angle R$ is

(a) acute angle (b) obtuse angle
(c) right angle (d) None of these

27 If $\frac{x\,\text{cosec}^2 30° \sec^2 45°}{8\cos^2 45° \sin^2 60°} = \tan^2 60° - \tan^2 30°$, then x is equal to

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

28. Two dice are thrown simultaneously. Then the number of possible outcomes for getting the sum from 3 to 10 is

(a) 32 (b) 30 (c) 34 (d) 38

29. The sum of powers of prime factors of 196 is

(a) 1 (b) 2 (c) 4 (d) 6

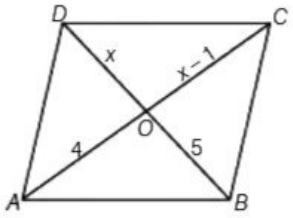
30. If α and β are the zeroes of the polynomial $p(x) = 4x^2 + 3x + 7$, then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ is

(a) $\frac{47}{28}$ (b) $\frac{-47}{28}$ (c) $\frac{-28}{47}$ (d) $\frac{28}{47}$

31. The distance between the points $P(2, -3)$ and $Q(10, y)$ is 10 then the value of y is

(a) $3, -9$ (b) 2, 7 (c) 1, 3 (d) 3, 9

32. In the given figure, if $ABCD$ is a rhombus, then the value of x is



(a) 3 (b) 4 (c) 5 (d) 6

33. If $\sin\theta - \cos\theta = 0$, then $\sin^4\theta + \cos^4\theta$ is equal to

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

34. A letter is chosen at random from the English alphabets Find the probability that the letter chosen succeeds V.

(a) $\frac{2}{13}$ (b) $\frac{5}{26}$ (c) $\frac{1}{26}$ (d) $\frac{1}{2}$

35. Which of the following rational numbers have terminating decimal?

(i) $\frac{16}{25}$ (ii) $\frac{5}{18}$ (iii) $\frac{2}{21}$ (iv) $\frac{7}{250}$

(a) (i) and (ii) (b) (ii) and (iii)
(c) (i) and (iii) (d) (i) and (iv)

36. A quadratic polynomial whose one zero is 5 and product of the zeroes is 0, is

(a) $x^2 - 5$ (b) $x^2 - 5x$ (c) $5x^2 + 1$ (d) $x^2 + 5x$

37. If $P\left(\frac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of a is

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

38. The sides of a triangle are 30, 70 and 80 units. If an altitude is droped upon the side of length 80 units, the larger segment cut off on this side is

(a) 62 units (b) 63 units (c) 64 units (d) 65 units

39. If $x \sin\theta = 1$ and $\cot\theta = y$, then which of the following is correct?

(a) $x^2 + y^2 = 1$ (b) $x^2 - y^2 = 1$
(c) $y^2 - x^2 = 1$ (d) None of these

40. There are five cards in which the numbers are written as nine, ten, jack, queen and king of hearts. These cards are well shuffled with their face downwards, one card is then picked up at random. The probability that the drawn card is a king, is

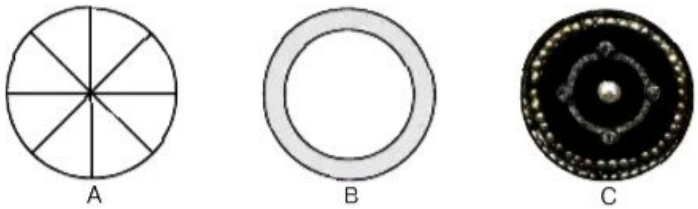
(a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (d) $\frac{4}{5}$

Section C

Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.
41-45 are based on Case Study-1.

Case Study 1

A earing is a small piece of jewellery which has a hook/pin at the back side so that it can be fastened on ears. Designs of some earing are shown below. Observe them carefully.



Design A Earing A is made with platinum wire in the form of a circle with diameter 28 mm. The wire used for making 4 diameters which divide the circle into 8 equal parts.

Desion B Earing B is made two colours platinum and silver. Outer parts is made with platinum The circumference of silver part is 88 mm and the platinum part is 7 mm wide everywhere.

Observe the above designs and answer the following questions.

Refer to Design A

41. The total length of platinum wire required is
(a) 180 mm (b) 200 mm (c) 250 mm (d) 280 mm

42. The area of each sector of earing is
(a) 44 mm^2 (b) 52 mm^2 (c) 77 mm^2 (d) 68 mm^2

Refer to Design B

43. The circumference of outer part platinum is
(a) 48.49 mm (b) 82.20 mm (c) 72.50 mm (d) 132 mm

44. The difference of areas of platinum and silver parts is
(a) 245 π mm^2 (b) 44 π mm^2 (c) 147 π mm^2 (d) 64 π mm^2

45. A boy is playing with brooch B. He makes revolution with it along its edge. How many complete revolutions must it take to cover 168 π mm?
(a) 2 (b) 3 (c) 4 (d) 5

46-50 are based on Case Study-2.

Case Study 2

Palak went to a mall with her mother and enjoy rides on the giant wheel and play hoopla (a game in which you throw a ring on the items kept in stall and if the ring covers any object completely you get it). The number of times she played hoopla is half the number of times she rides the giant wheel. If each ride costs ₹ 3 and a game of hoopla costs ₹ 4 and she spent ₹ 20 in the fair.

Based on the given information, give the answer of the following questions

46. The representation of given statement algebraically is
(a) $x-2y=0$ and $3x+4y=20$ (b) $x+2y=0$ and $3x-4y=20$
(c) $x-2y=0$ and $4x+3y=20$ (d) None of these

47. Graphically, if the pair of equations intersect at one point, then the pair of equations is
(a) consistent (b) Inconsistent
(c) Consistent or inconsistent (d) None of these

48. The intersection point of two lines is
(a) (–4, –2) (b) (4, 3) (c) (2, 4) (d) (4, 2)

49. Intersection points of the line $x-2y=0$ on X and Y-axes are
(a) (2, 0), (0, 1) (b) (1, 0), (0, 2) (c) (0, 0) (d) None of these

50. Intersection points of the line $3x+4y=20$ on X and Y-axes are
(a) $\left(\frac{20}{3},0\right),(0,5)$ (b) (2, 0), (0, 1) c) (5, 0), $\left(0,\frac{20}{3}\right)$ (d) None of these