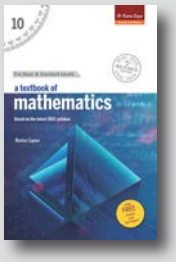


Sample Question Paper 1

Term 1

STANDARD

Time Allowed: 90 minutes | Maximum Marks: 40

General Instructions:

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

SECTION A

1. A pack of cards is shuffled well after all the face cards have been removed. Then, the probability of drawing a non-red ace from the new pack is

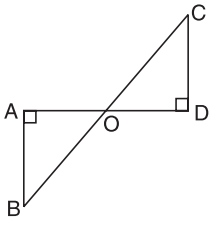
(*a*) $\frac{1}{13}$ (*b*) $\frac{1}{20}$ (*c*) $\frac{1}{36}$ (*d*) $\frac{2}{13}$

2. The pair of equations $x = 4$ and $y = 3$ graphically represent lines which are

(*a*) coincident. (*b*) parallel.

(c) intersecting at (3, 4). (*d*) intersecting at (4, 3).

3. In the given figure, $\Delta ABO \sim \Delta DCO$. If CD = 2 cm, AB = 3 cm, OC = 3.2 cm, OD = 2.4 cm, then



(*a*) OA = 3 cm, OB = 4 cm

(*b*) OA = 3.2 cm, OB = 4.6 cm

(*c*) OA = 4.3 cm, OB = 3.5 cm

(*d*) OA = 3.6 cm, OB = 4.8 cm

4. If $\tan 3\theta = \sin 30° + \cos 45° \sin 45°$ then the value of θ is

(*a*) 15° (*b*) 30° (*c*) 45° (*d*) 60°

5. The area of a circle is 64 π cm^2. Its circumference is

(*a*) 7π cm (*b*) 16π cm (*c*) 14π cm (*d*) 21π cm

6. The perpendicular bisector of the line segment joining the points A(2, 3) and B(5, 6) cuts the y-axis at

(a) (8, 0) (b) (0, 8) (c) (0, – 8) (d) (0, 7)

7. If α and β are the zeroes of the quadratic polynomial $x^2 - 5x + 4$ then $\frac{1}{\alpha}+\frac{1}{\beta} - 2\alpha\beta$ is equal to

(a) $\frac{-37}{4}$ (b) $\frac{37}{4}$ (c) $\frac{-27}{4}$ (d) $\frac{27}{4}$

8. If $\cos\theta + \cos^2\theta = 1$, then the value of $\sin^2\theta + \sin^4\theta$ is

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

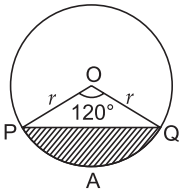
9. If $\tan\theta = \frac{4}{5}$, then the value of $\frac{5\sin\theta - 2\cos\theta}{5\sin\theta + 2\cos\theta}$ is

(a) $\frac{1}{3}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (d) 6

10. $\Delta PQR \sim \Delta XYZ$. If XY = 4 cm, YZ = 4.5 cm and ZX = 6.5 cm, PQ = 8 cm, then perimeter of ΔPQR is

(a) 25 cm (b) 23 cm (c) 15 cm (d) 30 cm

11. In the given figure, area of segment PAQ is



(a) $\left(\frac{\pi}{3} - \frac{\sqrt{3}}{2}\right)r^2$ (b) $\left(\frac{\pi}{3} - \frac{\sqrt{3}}{4}\right)r^2$

(c) $\left(\frac{\pi}{3} - \frac{2}{\sqrt{3}}\right)r^2$ (d) $\left(\frac{\pi}{3} - \frac{4}{\sqrt{3}}\right)r^2$

12. The distance between the points P(6, 0) and Q(–2, 0) is

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

13. The value of α for which the pair of equations $3x + \alpha y = 6$ and $6x + 8y = 7$ will have infinitely many solutions is

(a) 4 (b) no value (c) 3 (d) $\frac{1}{2}$

14. If $\text{cosec}\,\theta = 2$, $\cot\theta = \sqrt{3}p$, then the value of p is

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

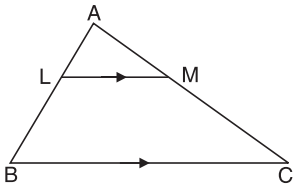
15. Given that HCF (2520, 6600) = 40, LCM (2520, 6600) = 252 × k, then the value of k is

(a) 1650 (b) 1600 (c) 165 (d) 1625

16. The largest number which divides 281 and 1249 leaving remainder 5 and 7 respectively is

(a) 23 (b) 276 (c) 138 (d) 69

17. In the given figure, if $\frac{\text{ar}(\Delta ALM)}{\text{ar}(\text{trapezium LMCB})} = \frac{9}{16}$, then AL : LB is equal to



(*a*) 2 : 3 (*b*) 3 : 4

(*c*) 3 : 5 (*d*) 3 : 2

18. If $\frac{2}{x}+\frac{3}{y}=13$ and $\frac{5}{x}-\frac{4}{y}=-2$, then $x + y$ equals

(*a*) $\frac{1}{6}$ (*b*) $\frac{-1}{6}$ (*c*) $\frac{5}{6}$ (*d*) $\frac{-5}{6}$

19. Two dice are thrown together. The probability of getting the same number on both the dice is

(*a*) $\frac{1}{2}$ (*b*) $\frac{1}{3}$ (*c*) $\frac{1}{6}$ (*d*) $\frac{1}{12}$

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

(*a*) $\frac{3}{10}$ (*b*) $\frac{1}{10}$ (*c*) 3 (*d*) $\frac{3}{100}$

SECTION - B

21. The pair of linear equations $(3k + 1)x + 3y - 5 = 0$ and $2x - 3y + 5 = 0$ have infinite number of solutions. Then the value of k is

(*a*) 1 (*b*) 0 (*c*) 2 (*d*) –1

22. If D is a point on side BC of ΔABC such that BD = CD = AD, then

(*a*) $CD^2 + AD^2 = AC^2$ (*b*) $BD^2 + AD^2 = AB^2$

(*c*) $AB^2 + AC^2 = BC^2$ (*d*) $AB \cdot AC = AD^2$

23. The point P which divides the line segment joining the points A(2, – 5) and B(5, 2) in ratio 2 : 3 internally lies in the

(*a*) I quadrant (*b*) II quadrant

(*c*) III quadrant (*d*) IV quadrant

24. In ΔABC right-angled at C, if tan A = 1, then the value of 2 sin A cos A is

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

25. Prime factorisation of the denominator of the rational number 26.1234

(*a*) is of the form $2^m \times 5^n$ where m, n are integers

(*b*) has factors other than 2 or 5

(*c*) is of the form $2^m \times 5^n$ where m, n are non-negative integers

(*d*) is of the form $2^m \times 5^n$ where m and n are positive integers

26. If π is taken as $\frac{22}{7}$, the distance (in metres) covered by a wheel of diameter 35 cm, in one revolution is

(*a*) 1.1 (*b*) 2.2 (*c*) 9.625 (*d*) 96.25

27. A bag contains 5 red balls and n green balls. If the probability of drawing a green ball is three times that of a red ball, then the value of n is

(*a*) 18 (*b*) 15 (*c*) 10 (*d*) 20

28. If the HCF of 408 and 1032 is expressible in the form $1032m - 408 \times 5$, then the value of m is

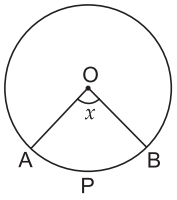
(*a*) 4 (*b*) 3 (*c*) 1 (*d*) 2

29. If $a = 3 \times 5$, $b = 3 \times 5^2$ and $c = 2^5 \times 5$, then LCM (a, b, c) and HCF (a, b, c) are

(*a*) 1200, 5 (*b*) 2400, 5

(*c*) 2400, 15 (*d*) 1200, 15

30. In the given figure, O is the centre of the circle. If the area of sector OAPB is $\frac{5}{18}$ of the area of the circle, then the measure of x is



(*a*) 120° (*b*) 90°

(*c*) 60° (*d*) 100°

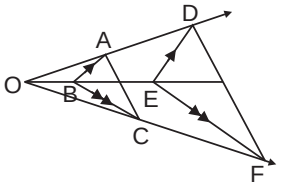
31. If the vertices of a triangle are (3, –5), (–7, 4), (10, –k) and its centroid is (k, –1), then

(*a*) $k = 3$ (*b*) $k = 1$ (*c*) $k = 2$ (*d*) $k = 4$

32. If the sum of squares of zeroes of the quadratic polynomial $3x^2 + 5x + k$ is $\frac{-2}{3}$, then the value of k is

(*a*) $\frac{31}{6}$ (*b*) $\frac{31}{9}$ (*c*) $\frac{25}{6}$ (*d*) $\frac{25}{9}$

33. In the adjoining figure, AB || DE and BC || EF. If OA = 2 units and AD = 3 units, then, AC : DF equals



(*a*) 2 : 3 (*b*) 3 : 5

(*c*) 3 : 2 (*d*) 2 : 5

34. If a coin is tossed three times, then the probability of getting at most 2 heads is

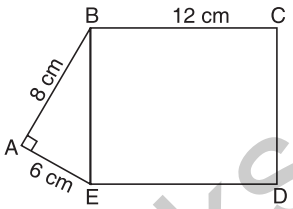
(*a*) $\frac{5}{8}$ (*b*) $\frac{3}{8}$ (*c*) $\frac{7}{8}$ (*d*) $\frac{3}{4}$

35. What is the smallest positive integer which should be multiplied with 6^n, (where n is a natural number) so that it ends with the digit 0?

(*a*) no possible digit (*b*) 3

(*c*) 5 (*d*) 25

36. In the given figure, if AB = 8 cm, BC = 12 cm, AE = 6 cm then the area of rectangle BCDE is



(*a*) 48 cm^2

(*b*) 72 cm^2

(*c*) 96 cm^2

(*d*) 120 cm^2

37. If x and y are two rational numbers then $x + y$ is

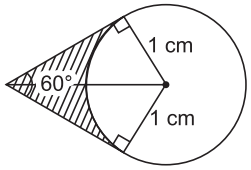
(*a*) an irrational number

(*b*) a rational number

(*c*) either rational or irrational number

(*d*) neither rational nor irrational number

38. In the given figure, if the radius of the circle is 1 cm and $\angle A = 60°$, then the area of the shaded region is



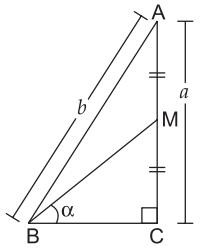
(*a*) $\left(\sqrt{3} - \frac{\pi}{3}\right) cm^2$

(*b*) $\left(\sqrt{3} + \frac{\pi}{3}\right) cm^2$

(*c*) $\left(\frac{\pi}{\sqrt{3}} - 3\right) cm^2$

(*d*) $\left(\frac{\pi}{\sqrt{3}} + 3\right) cm^2$

39. In the given figure, AM = MC and $\angle C$ is a right angle then $\sin^2 \alpha - \cos^2 \alpha$ is equal to



(*a*) $\frac{4b^2 - 3a^2}{5a^2 - 4b^2}$ (*b*) $\frac{5a^2 - 4b^2}{4b^2 - 3a^2}$

(*c*) $\frac{4a^2 - 5b^2}{3b^2 - 4a^2}$ (*d*) $\frac{3b^2 - 4a^2}{4a^2 - 5b^2}$

40. If the graph of the equations $3x + 4y = 12$ and $(m + n)x + 2(m - n)y = (5m - 1)$ is a coincident line, then

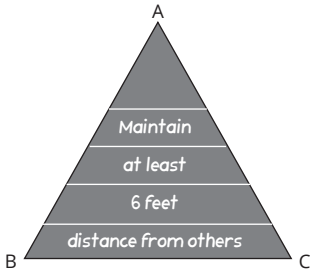
(*a*) $m = -1, n = -5$ (*b*) $m = 1, n = 5$

(*c*) $m = 5, n = 1$ (*d*) $m = -5, n = -1$

SECTION C

Case Study 1

To raise the awareness off social distancing due to corona virus, a school has decided to put posters in each classroom. 6 students are asked to prepare it in the shape of a triangle and the coordinates of one of the triangle are A(3,2), B(–2,1) and C(4,–4).



Based on the above information, answer the following.

41. If X is the mid-point of line joining A and B, then the coordinates of X are

(*a*) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (*b*) $\left(\frac{3}{2}, \frac{1}{2}\right)$

(*c*) $\left(\frac{-1}{2}, \frac{3}{2}\right)$ (*d*) $\left(\frac{-3}{2}, \frac{1}{2}\right)$

42. The coordinates of centroid of ΔABC are

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

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

43. If Y is the mid-point of line joining B and C, then the coordinates of Y are

(*a*) $\left(3, \frac{-3}{2}\right)$ (*b*) $\left(1, \frac{-3}{2}\right)$

(*c*) $\left(3, \frac{5}{2}\right)$ (*d*) $\left(-3, \frac{-5}{2}\right)$

44. If Z divides the line segment AC in the ratio 1 : 2, then the coordinates of Z are

(*a*) $\left(\frac{13}{3}, \frac{-2}{3}\right)$ (*b*) $\left(\frac{13}{3}, \frac{10}{3}\right)$

(*c*) $\left(\frac{13}{3}, \frac{2}{3}\right)$ (*d*) $\left(\frac{-10}{3}, 0\right)$

45. The distance between the points B and C is

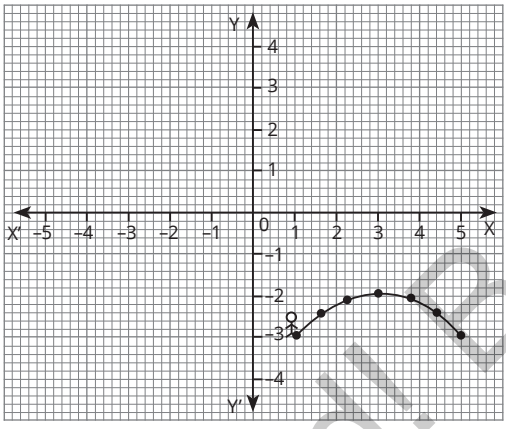
(*a*) $\sqrt{26}$ units (*b*) $\sqrt{11}$ units

(*c*) $\sqrt{37}$ units (*d*) $\sqrt{61}$ units

Case Study 2

Amartya while playing football was quite intrigued by the path his ball followed after he kicked it. He tried to observe the path of a stone after it was thrown up at an acute angle with the horizontal. Then, he requested his teacher to show him the graphical representation of the path followed by the ball/stone.

46. Number of zeroes possessed by the quadratic polynomial represented by the given graph is/are



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

47. If 1 is zero of the polynomial $p(x) = qx^2 - 3(q-1)x - 1$, then the value of q is

(*a*) 2 (*b*) –1

(*c*) 1 (*d*) –2

48. A quadratic polynomial, one of whose zero is $\sqrt{3}$ and the product of whose zeroes is $-2\sqrt{3}$, is

(*a*) $x^2 - (2-\sqrt{3})x - 2\sqrt{3}$ (*b*) $x^2 - (2-\sqrt{3})x + 2\sqrt{3}$

(*c*) $x^2 + (2-\sqrt{3})x - 2\sqrt{3}$ (*d*) $x^2 + (2-\sqrt{3})x + 2\sqrt{3}$

49. A quadratic polynomial, one of whose zero is $\sqrt{3} + 5$ and the sum of whose zeroes is equal to 6, is

(*a*) $x^2 - 6x + 4$ (*b*) $x^2 + 6x + 4$

(*c*) $x^2 - 6x - 4$ (*d*) $-x^2 - 6x + 4$

50. The sum and product respectively of the zeroes of polynomial $4x^2 - x - 4$ are

(*a*) 4, 1 (*b*) $\frac{1}{4}, \frac{1}{4}$

(*c*) $\frac{1}{4}, -1$ (*d*) 1, 1