SET-04

Series JSK/2

Code No. 430/2/4

Roll No. | | | | | | | |

Candidates must write the Code on the title page of the answer-book

(i) Please check that this question paper contains **7** printed pages.

(ii) Please check that this question paper contains **60** Multiple Choice Questions (MCQs).

(iii) Question Paper Code given on the top right hand side of the question paper should be written in the appropriate place in the OMR Sheet by the candidate

(iv) 20 minute additional time has been allotted to read this question paper prior to actual time of commencement of the examination.

MATHEMATICS (BASIC)

Term-I

Time allowed : 90 minutes **Maximum Marks : 40**

General Instructions :

Read the following instructions very carefully and strictly follow them :

(i) This question paper contains **50 questions** out of which 50 questions are to be attempted. All questions carry equal marks.

(ii) This question paper consists of four sections — Section A, B, and C

(iii) Section A contains **20 questions**. Attempt any 16+ questions from Q. No. 1 to 20.

(iv) Section B contains **20 questions**. Attempt any 16 questions from Q. No. 21 to 40.

(v) Section C contains of two Case studies containing **5 questions** in each case . Attempt any **4** questions from **Q. No. 41 to 45** and another **4 from Q. No. 46 to 50.**

(vi) There is only one correct Option for every multiple choice question (MCQ). Marks will not be awarded for answering more than one option.

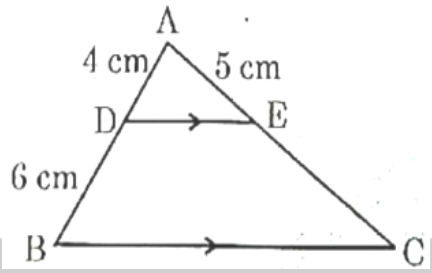
(vii) There is no negative marking.

SECTION - A

(In this Section, there 20 Questions. Any 16 are to be attempted.)

1. HCF of 92 and 152 is
(a) 4 (b) 19 (c) 23 (d) 57
Ans. (b)

2. In ΔABC, DE||BC, AD = 4 cm, DB = 6 cm and AE = 5 cm. The length of EC is



(a) 7 cm (b) 6.5 cm (c) 7.5 cm (d) 8 cm
Ans. (d)

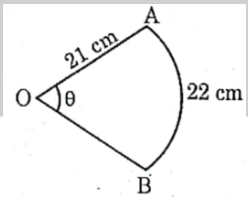
3. The value of k, for which the pair of linear equaitons x + y – 4 = 0. 2x + ky – 3 = 0 have no solution, is
(a) 0 (b) 2 (c) 6 (d) 8
Ans. (b)

4. The value of $(\tan^2 45^o - \cos^2 60^o)$ is :
(a) 1/2 (b) 1/4 (c) 3/2 (d) 3/4
Ans. (d)

5. A point (x, 1) is equidistant from (0, 0) and (2, 0). The value of x is
(a) 1 (b) 0 (c) 2 (d) 1/2
Ans. (a)

6. Two coins are tossed together. The probability of getting exactly one head is
(a) 1/4 (b) 1/2 (c) 3/4 (d) 1
Ans. (b)

7. A circular arc of length 22 cm subtends an angle θ at the centre of the circle of radius 21 cm. The value of θ is



(a) 90º (b) 50º (c) 60º (d) 30º
Ans. (c)

8. A quadratic polynomial having sum and product of its zeroes as 5 and 0 respectively, is :
(a) $x^2 + 5x$ (b) $2x(x - 5)$ (c) $5x^2 - 1$ (d) $x^2 - 5x + 5$
Ans. (b)

9. If P(E) = 0.65, then the value of P(not E) is
(a) 1.65 (b) 0.25 (c) 0.65 (d) 0.35
Ans. (d)

10. It is given that $\Delta DEF \sim \Delta PQR$. EF : QR = 3 : 2, then value of ar(DEF) : ar(PQR) is
(a) 4 : 9 (b) 4 : 3 (c) 9 : 2 (d) 9 : 4
Ans. (d)

11. Zeroes of a quadratic polynomial $x^2 - 5x + 6$ are
(a) –5, 1 (b) 5, 1 (c) 2, 3 (d) –2, –3
Ans. (c)

12. $\frac{57}{300}$ is a
(a) non-terminating and non-repeating decimal expansion.
(b) terminating decimal expansion after 2 places of decimals.
(c) terminating decimal expansion after 3 places of decimals.
(d) non-terminating but repeated decimal expansion.
Ans. (b)

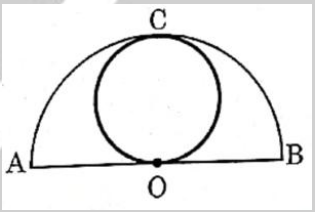
13. Perimeter of a rectangle whose length (l) is 4 cm more than twice its breadth (b) is 14 cm. The pair of linear equations representing the above information is
(a) $l + 4 = 2b$, $2(l + b) = 14$ (b)) $l - b = 4$, $2(l + b) = 14$ (c) $l = 2b + 4$, $l + b = 14$ (d) $l = 2b + 4$, $2(l + b) = 14$
Ans. (d)

14. $5.\overline{213}$ can also be written as
(a) 5.213213213 (b) 5.2131313 (c) 5.213 (d) 5213/1000
Ans. (a)

15. The ratio in which the point (4,0) divides the line segment joining the points (4,6) and 4.-8) is
(a) 1 : 2 (b) 3 : 4 (c) 4 : 3 (d) 1 : 1
Ans. (b)

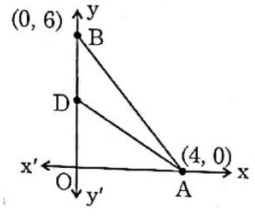
16. Which of the following is not defined?
(a) sec 0^o (b) cosec 0^o (c) ten 90^o (d) cot 90^o
Ans. (c)

17. In the given figure, a circle is touching a semi-circle at C and its diameter AB at O. If AB = 28 cm, what is the radius of the inner circle?



(a) 14 cm (b) 28 cm (c) 7 cm (d) 7/2 cm
Ans. (c)

18. The vertices of a triangle OAB are O(0,0), A(4,0) and B(0,6). The median AD is drawn on OB. The length AD is.



(a) $\sqrt{52}$ unit (b) 5 unit (c) 25 units (d) 10 units
Ans. (b)

19. In a right-angled triangle PQR, $\angle Q = 90^o$. If $\angle P = 45^o$, then value of tan P–$\cos^2$ R is
(a) 0 (b) 1 (c) 1/2 (d) 3/2
Ans. (c)

20. If $\tan\theta = \frac{2}{3}$, then the value of $\sec\theta$ is

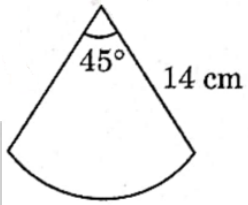
(a) $\frac{\sqrt{13}}{3}$ (b) $\frac{\sqrt{5}}{3}$ (c) $\sqrt{\frac{13}{3}}$ (d) $\frac{3}{\sqrt{13}}$

Ans. (a)

SECTION – B

(There are 20 questions of 1 mark each. Any 16 are to be attempted.)

21 The perimeter of the sectro of a circle of radius 14 cm and central angle 45° is



(a) 11 cm (b) 22 cm (c) 28 cm (d) 39 cm

Ans. (d)

22 A bag contains 16 red balls, 8 green balls and 6 blue balls. One ball is drawn at random. The probability that it is blue ball is

(a) $\frac{1}{6}$ (b) $\frac{1}{5}$ (c) $\frac{1}{30}$ (d) $\frac{5}{6}$

Ans. (b)

23 If $\sin\theta - \cos\theta = 0$, then the value of θ is

(a) 30° (b) 45° (c) 90° (d) 0°

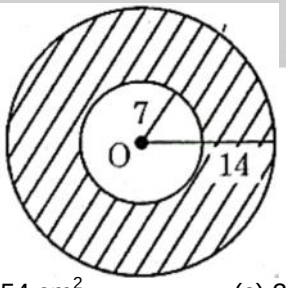
Ans. (b)

24 The probability of happening of an event is 0.02. The probability of not happening of the event is

(a) 0.02 (b) 0.80 (c) 0.98 (d) $\frac{49}{100}$

Ans. (c)

25 Two concentric circles are centred at O. The area of shaded region, if outer and inner raddii are 14 cm and 7 cm respectively, is



(a) 462 cm^2 (b) 154 cm^2 (c) 231 cm^2 (d) 308 cm^2

Ans. (a)

26 $\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta}$ can be simplified to get

(a) $2\cos^2\theta$ (b) $\frac{1}{2}\sec^2\theta$ (c) $\frac{2}{\sin^2\theta}$ (d) $2\sec^2\theta$

Ans. (d)

27. The origin divides the line segment AB joining the points A(1, – 3) and B(–3, 9) in the ratio :
(a) 3 : 1 (b) 1 : 3 (c) 2 : 3 (d) 1 : 1
Ans. (b)

28. The perpendicular bisector of a line segment A(–8, 0) and B(8, 0) passes through a point (0, k). The value of k is
(a) 0 only (b) 0 or 8 only (c) any real number (d) any non-zero real number
Ans. (c)

29. Which of the following is a correct statement?
(a) Two congruent figures are always similar.
(b) Two similar figures are always congruent.
(c) All rectangles are similar.
(d) The polygons having same number of sides are similar.
Ans. (a)

30. The solution of the pair of linear equations x = – 5 and y = 6 is
(a) (–5, 6) (b) (–5, 0) (c) (0, 6) (d) (0, 0)
Ans. (a)

31. A circle of radius 3 unit is centered at (0, 0). Which of the following points lie outside the circle?
(a) (–1, –1) (b) (0, 3) (c) (1, 2) (d) (3, 1)
Ans. (d)

32. The value of k for which the pair of linear equations 3x + 5y = 8 and kx + 15y = 24 has infinitely many solutions, is
(a) 3 (b) 9 (c) 5 (d) 15
Ans. (b)

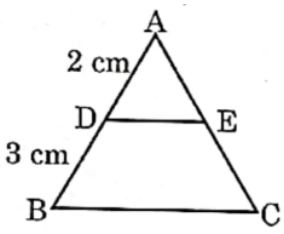
33. HCF of two consecutive even numbers is
(a) 0 (b) 1 (c) 2 (d) 4
Ans. (c)

34. The zeroes of quadratic polynomial x^2 +99 x +127 are
(a) both negative (b) both positive
(c) one positive and one negative (d) reciprocal of each other
Ans. (a)

35. The mid-point of line segment joining the points (–3, 9) and (–6, –4) is
(a) $\left(\frac{-3}{2},\frac{-13}{2}\right)$ (b) $\left(\frac{9}{2},\frac{-5}{2}\right)$ (c) $\left(\frac{-9}{2},\frac{5}{2}\right)$ (d) $\left(\frac{9}{2},\frac{5}{2}\right)$
Ans. (c)

36. The decimal expansion of $\frac{13}{2\times5^2\times7}$ is
(a) terminating after 1 decimal place (b) non-terminating and-repeating.
(c) terminating after 2 decimal places. (d) non-terminating but repeating
Ans. (d)

37. In ΔABC, $DE \| BC$, AD = 2 cm, DB = 3 cm, DE : BC is equal to



(a) 2 : 3 (b) 2 : 5 (c) 1 : 2 (d) 3 : 5
Ans. (b)

38. The (HCF × LCM) for the numbers 50 and 20 is
(a) 1000 (b) 50 (c) 100 (d) 500
Ans. (a)

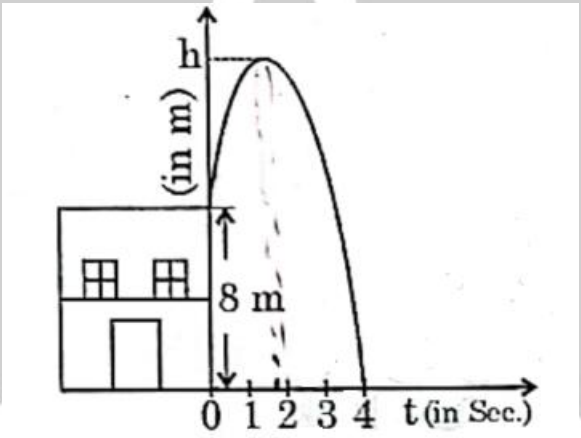
39. For which natural number n, 6^n ends with digit zero?
(a) 6 (b) 5 (c) 0 (d) None
Ans. (d)

40. $(1 + \tan^2 A)(1 + \sin A)(1 - \sin A)$ is equal to
(a) $\frac{\cos^2 A}{\sec^2 A}$ (b) 1 (c) 0 (d) 2
Ans. (b)

SECTION -C

(Attempt any 4 questions from Q. No. 41 to 45 and another 4 from Q. No. 46 to 50.)

Case Study-I:
Sukriti throws a ball upwards, from a rooftop which is 8 m high from ground level. The ball reaches to some maximum height and returns and hit the ground.
It height of the ball at time t (in sec) is represented by h(m), then equation of its path is given as $h = -t^2 + 2t + 8$
Based on above information, answer the following:



41. The maximum height achieved by ball is
(a) 7 m (b) 8 m (c) 9 m (d) 10 m
Ans. (c)

42. The polynomial represented by above graph is
(a) linear polynomial (b) quadratic polynomial
(c) constant polynomial (d) cubic polynomial
Ans. (b)

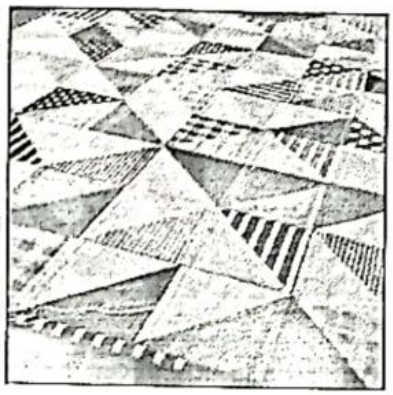
43. Time taken by ball to reach maximum height is
(a) 2 sec. (b) 4 sec. (c) 1 sec. (d) 2 min.
Ans. (c)

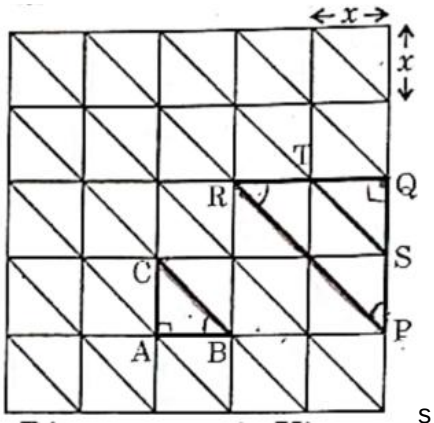
44. Number of zeroes of the polynomial whose graph is given, is
(a) 1 (b) 2 (c) 0 (d) 3
Ans. (b)

45. Zeroes of the polynomial are
(a) 4 (b) –2, 4 (c) 2, 4 (d) 0, 4
Ans. (b)

Case Study-II:

Quilts are available in various





colours and designs.
Geometric design includes shapes like squares, triangles, rectangles, hexagons etc.
One such design is shown above. Two triangles are highlighted, ΔABC and ΔPQR.
Based on above information, answer the following equestion.

46. Which of the following criteria is not suitable for ΔABC to be similar to ΔQRP?
(a) SAS (b) AAA (c) SSS (d) RHS
Ans. (d)

47. If each square is of length x unit, then length BC is equal to
(a) $x\sqrt{2}$ unit (b) 2x unit (c) $2\sqrt{x}$ unit (d) $x\sqrt{x}$ unit
Ans. (a)

48. Ratio BC : PR is equal to
(a) 2 : 1 (b) 1 : 4 (c) 1 : 2 (d) 4 : 1
Ans. (c)

49. ar(PQR) : ar(ABC) is equal to
(a) 2 : 1 (b) 1 : 4 (c) 4 : 1 (d) 1 : 8
Ans. (c)

50. Which of the following is not true?
(a) $\Delta TQS \sim \Delta PQR$ (b) $\Delta CBA \sim \Delta STQ$ (c) $\Delta BAC \sim \Delta PQR$ (d) $\Delta PQR \sim \Delta ABC$
Ans. (d)

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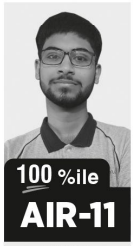
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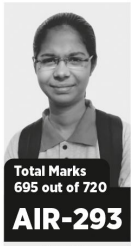
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