

Series JSK/1

Set No. 4

अनुक्रमांक
Roll No.

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प्रश्न-पत्र कोड
Question Paper Code **030/1/4**

छात्र प्रश्न-पत्र कोड को OMR शीट में आबंटित जगह में लिखें।

Candidates must write the Question Paper Code in the space allotted in the OMR Sheet.

नोट / NOTE :

- (i) कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 15 हैं।
Please check that this question paper contains 15 printed pages.
- (ii) प्रश्न-पत्र में ऊपरी दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को छात्र OMR शीट में उपयुक्त स्थान पर लिखें।
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.
- (iii) कृपया जाँच कर लें कि इस प्रश्न-पत्र में 50 बहुविकल्पीय प्रश्न (MCQs) हैं।
Please check that this question paper contains 50 Multiple Choice Questions (MCQs).
- (iv) परीक्षा शुरू होने के वास्तविक समय से पहले इस प्रश्न-पत्र को पढ़ने के लिए 20 मिनट का अतिरिक्त समय आबंटित किया गया है।
20 minute additional time has been allotted to read this question paper prior to actual time of commencement of the examination.

गणित (मानक)

MATHEMATICS (Standard)

Term-I

निर्धारित समय : 90 मिनट
Time allowed : 90 minutes

अधिकतम अंक : 40
Maximum Marks : 40

030/1/4

Page 1

P.T.O.

General Instructions :

- (i) This question paper contains **50** question out of which **40** questions are to be attempted as per instructions. All questions carry equal marks.
- (ii) This question paper consists of **three** Sections – Section A, Section B and Section C.
- (iii) Section A contains **20** questions. Attempt any **16** questions from questions no. **1** to **20**.
- (iv) Section B also contains **20** questions. Attempt any **16** questions from questions no. **21** to **40**.
- (v) Section C consists of **10** questions. Attempt any **8** questions from questions no. **41** 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.

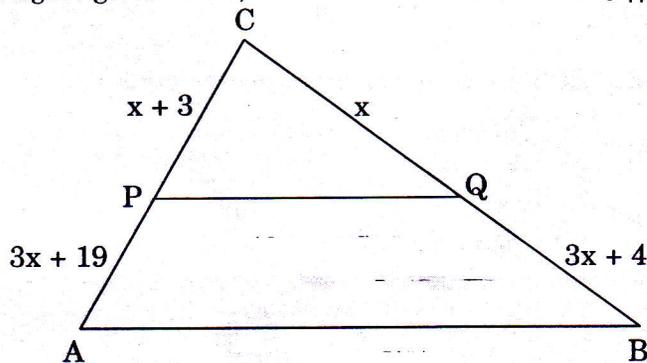
SECTION A

Questions no. 1 to 20 are of 1 mark each. Answer any 16 questions from Q. No. 1 – 20.

16×1=16

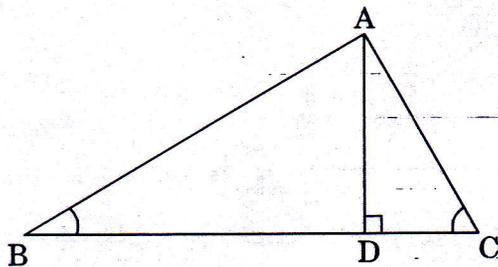
1. If HCF (39, 91) = 13, then LCM (39, 91) is :
(a) 91 (b) 273 (c) 39 (d) 3549
2. $4\sqrt{57}$ is a/an :
(a) integer (b) rational number
(c) natural number (d) irrational number
3. The line represented by $4x - 3y = 9$ intersects the y-axis at :
(a) (0, -3) (b) $(\frac{9}{4}, 0)$ (c) (-3, 0) (d) $(0, \frac{9}{4})$
4. The point on x-axis equidistant from the points P(5, 0) and Q(-1, 0) is :
(a) (2, 0) (b) (-2, 0) (c) (3, 0) (d) (2, 2)
5. If ΔABC and ΔPQR are similar triangles such that $\angle A = 31^\circ$ and $\angle R = 69^\circ$, then $\angle Q$ is :
(a) 70° (b) 100° (c) 90° (d) 80°
6. Given that $\cos \theta = \frac{\sqrt{3}}{2}$, then the value of $\frac{\operatorname{cosec}^2 \theta - \sec^2 \theta}{\operatorname{cosec}^2 \theta + \sec^2 \theta}$ is :
(a) -1 (b) 1 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$
7. The area swept by 7 cm long minute hand of a clock in 10 minutes is :
(a) 77 cm^2 (b) $12\frac{5}{6} \text{ cm}^2$ (c) $7\frac{1}{12} \text{ cm}^2$ (d) $25\frac{2}{3} \text{ cm}^2$

8. The probability of getting two heads when two fair coins are tossed together, is :
- (a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{2}$ (d) 1
9. Two positive numbers have their HCF as 12 and their product as 6336. The number of pairs possible for the numbers, is :
- (a) 2 (b) 3 (c) 4 (d) 1
10. The pair of equations $y = 2$ and $y = -3$ has
- (a) one solution (b) two solutions
(c) infinitely many solutions (d) no solutions
11. In the figure given below, what value of x will make $PQ \parallel AB$?



- (a) 2 (b) 3 (c) 4 (d) 5
12. Given that $\sin \alpha = \frac{\sqrt{3}}{2}$ and $\tan \beta = \frac{1}{\sqrt{3}}$, then the value of $\cos (\alpha - \beta)$ is :
- (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$ (c) 0 (d) $\frac{1}{\sqrt{2}}$
13. In a single throw of a die, the probability of getting a composite number is :
- (a) $\frac{1}{3}$ (b) $\frac{1}{2}$ (c) $\frac{2}{3}$ (d) $\frac{5}{6}$
14. The decimal expansion of the rational number $\frac{3177}{250}$ will terminate after
- (a) one decimal place (b) two decimal places
(c) three decimal places (d) four decimal places
15. The pair of lines represented by the linear equations $3x + 2y = 7$ and $4x + 8y - 11 = 0$ are
- (a) perpendicular (b) parallel (c) intersecting (d) coincident
16. In an equilateral triangle with length of side p , the length of the altitude is :
- (a) $\frac{\sqrt{3}}{2} p$ (b) $\frac{\sqrt{3}}{4} p$ (c) $\frac{\sqrt{3}}{2} p^2$ (d) $\frac{\sqrt{3}}{4} p^2$

17. Given that $\sin \theta = \frac{p}{q}$, $\tan \theta$ is equal to :
- (a) $\frac{p}{\sqrt{p^2 - q^2}}$ (b) $\frac{q}{\sqrt{p^2 - q^2}}$
(c) $\frac{p}{\sqrt{q^2 - p^2}}$ (d) $\frac{q}{\sqrt{q^2 - p^2}}$
18. A vertical pole of length 19 m casts a shadow 57 m long on the ground and at the same time a tower casts a shadow 51 m long. The height of the tower is :
- (a) 171 m (b) 13 m (c) 17 m (d) 117 m
19. The simplest form of $\sqrt{(1 - \cos^2 \theta)(1 + \tan^2 \theta)}$ is :
- (a) $\cos \theta$ (b) $\sin \theta$ (c) $\cot \theta$ (d) $\tan \theta$
20. In the given figure, $\angle ABC$ and $\angle ACB$ are complementary to each other and $AD \perp BC$. Then,



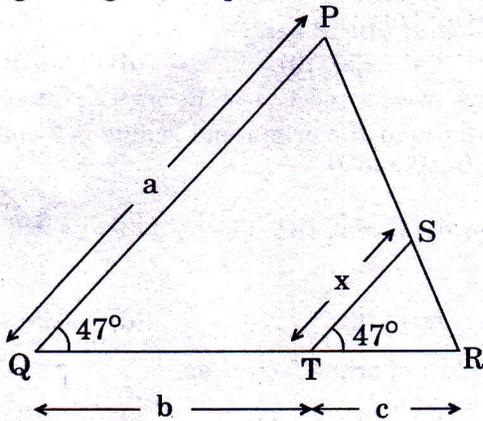
- (a) $BD \cdot CD = BC^2$ (b) $AB \cdot BC = BC^2$
(c) $BD \cdot CD = AD^2$ (d) $AB \cdot AC = AD^2$

SECTION B

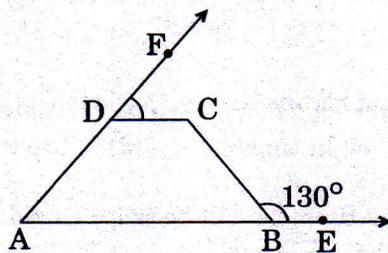
Questions no. 21 to 40 are of 1 mark each. Answer any 16 questions from Q. No. 21 – 40. $16 \times 1 = 16$

21. If one of the zeroes of a quadratic polynomial $(k - 1)x^2 + kx + 1$ is -3 , then the value of k is :
- (a) $\frac{4}{3}$ (b) $-\frac{4}{3}$ (c) $\frac{2}{3}$ (d) $-\frac{2}{3}$
22. If the lengths of diagonals of a rhombus are 10 cm and 24 cm, then the perimeter of the rhombus is :
- (a) 13 cm (b) 26 cm (c) 39 cm (d) 52 cm

23. In the given figure, x expressed in terms of a, b, c , is :



- (a) $x = \frac{ab}{a+b}$ (b) $x = \frac{ac}{b+c}$ (c) $x = \frac{bc}{b+c}$ (d) $x = \frac{ac}{a+c}$
24. $\frac{1}{\operatorname{cosec} \theta (1 - \cot \theta)} + \frac{1}{\sec \theta (1 - \tan \theta)}$ is equal to :
- (a) 0 (b) 1 (c) $\sin \theta + \cos \theta$ (d) $\sin \theta - \cos \theta$
25. If 'n' is any natural number, then $(12)^n$ cannot end with the digit :
- (a) 2 (b) 4 (c) 8 (d) 0
26. A wire can be bent in the form of a circle of radius 56 cm. If the same wire is bent in the form of a square, then the area of the square will be :
- (a) 8800 cm^2 (b) 7744 cm^2 (c) 6400 cm^2 (d) 3520 cm^2
27. The probability that a non-leap year has 53 Wednesdays, is :
- (a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{5}{7}$ (d) $\frac{6}{7}$
28. In the given figure, points A, B, C and D are concyclic and $\angle CBE = 130^\circ$. Then $\angle FDC$ is :



- (a) 130° (b) 80° (c) 50° (d) 30°

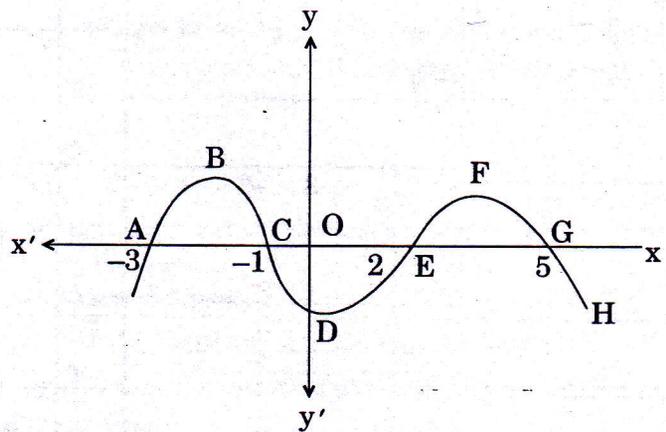
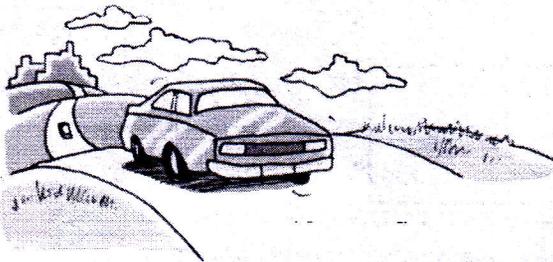
29. The x-coordinate of a point P is twice its y-coordinate. If P is equidistant from Q (2, -5) and R (-3, 6), then the coordinates of P are :
 (a) (8, 16) (b) (10, 20) (c) (20, 10) (d) (16, 8)
30. If the point (x, 4) lies on a circle whose centre is at the origin and radius is 5 cm, then the value of x is :
 (a) 0 (b) ± 4 (c) ± 5 (d) ± 3
31. The value of θ for which $2 \sin 2\theta = 1$, is :
 (a) 15° (b) 30° (c) 45° (d) 60°
32. The number 385 can be expressed as the product of prime factors as
 (a) $5 \times 11 \times 13$ (b) $5 \times 7 \times 11$ (c) $5 \times 7 \times 13$ (d) $5 \times 11 \times 17$
33. The difference between circumference and radius of a circle is 111 cm. The area of the circle is
 (a) 1366 cm^2 (b) 1386 cm^2 (c) 1376 cm^2 (d) 1396 cm^2
34. From the letters of the word 'MANGO', a letter is selected at random. The probability that the letter is a vowel, is :
 (a) $\frac{1}{5}$ (b) $\frac{3}{5}$ (c) $\frac{2}{5}$ (d) $\frac{4}{5}$
35. If $17x - 19y = 53$ and $19x - 17y = 55$, then the value of $(x + y)$ is :
 (a) 1 (b) -1 (c) 3 (d) -3
36. The ratio in which the point (-4, 6) divides the line segment joining the points A (-6, 10) and B (3, -8) is :
 (a) 2 : 5 (b) 7 : 2 (c) 2 : 7 (d) 5 : 2
37. If $\sin^2 \theta + \sin \theta = 1$, then the value of $\cos^2 \theta + \cos^4 \theta$ is :
 (a) -1 (b) 1 (c) 0 (d) 2
38. The decimal expansion of $\frac{43}{162}$:
 (a) is terminating
 (b) is non-terminating and non-recurring
 (c) is non-terminating and recurring
 (d) does not exist
39. If the circumference of a circle is tripled, then its area becomes :
 (a) three times (b) nine times (c) eight times (d) two times
40. A father is three times as old as his son. In 12 years time, he will be twice as old as his son. The sum of the present ages of the father and the son is :
 (a) 36 years (b) 48 years (c) 60 years (d) 42 years

SECTION C
(Case Study Based Questions)

Section C consists of 10 questions of 1 mark each. Attempt any 8 questions from Q. No. 41 – 50. $8 \times 1 = 8$

(Case Study – I)

A car moves on a highway. The path it traces is given below :



Based on the above information, answer the following questions :

41. What is the shape of the curve EFG ?
 (a) Parabola (b) Ellipse (c) Straight line (d) Circle

42. If the curve ABC is represented by the polynomial $-(x^2 + 4x + 3)$, then its zeroes are :
 (a) 1 and -3 (b) -1 and 3 (c) 1 and 3 (d) -1 and -3

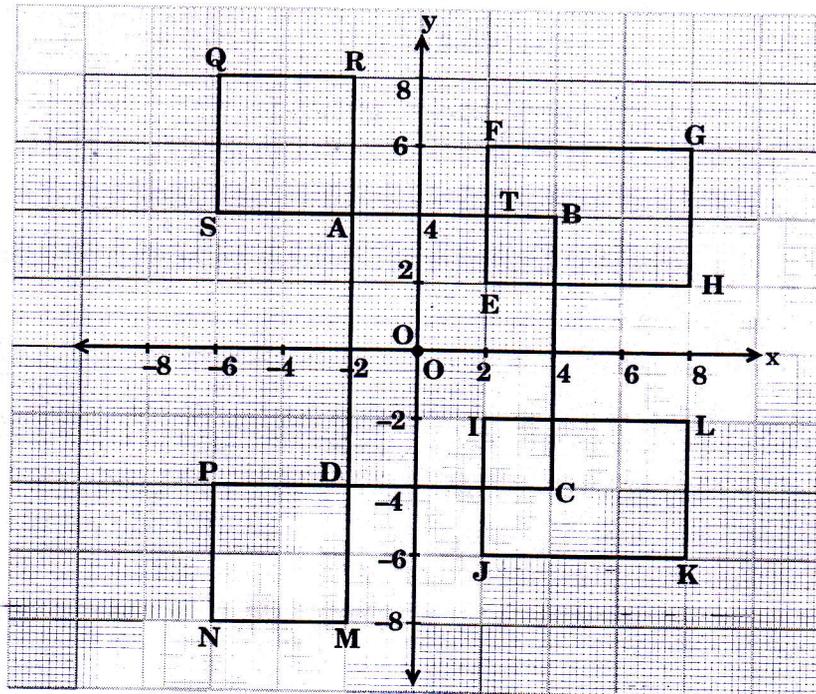
43. If the path traced by the car has zeroes at -1 and 2, then it is given by :
 (a) $x^2 + x + 2$ (b) $x^2 - x + 2$ (c) $x^2 - x - 2$ (d) $x^2 + x - 2$

44. The number of zeroes of the polynomial representing the whole curve, is :
 (a) 4 (b) 3 (c) 2 (d) 1

45. The distance between C and G is :
 (a) 4 units (b) 6 units (c) 8 units (d) 7 units

(Case Study - II)

Shivani is an interior decorator. To design her own living room, she designed wall shelves. The graph of intersecting wall shelves is given below :



Based on the above information, answer the following questions :

46. If O is the origin, then what are the coordinates of S ?
(a) $(-6, -4)$ (b) $(6, 4)$ (c) $(-6, 4)$ (d) $(6, -4)$
47. The coordinates of the mid-point of the line-segment joining D and H is :
(a) $(-3, \frac{2}{3})$ (b) $(3, -1)$ (c) $(3, 1)$ (d) $(-3, -\frac{2}{3})$
48. The ratio in which the x-axis divides the line-segment joining the points A and C, is :
(a) 2 : 3 (b) 2 : 1 (c) 1 : 2 (d) 1 : 1
49. The distance between the points P and G is
(a) 16 units (b) $3\sqrt{74}$ units (c) $2\sqrt{74}$ units (d) $\sqrt{74}$ units
50. The coordinates of the vertices of rectangle IJKL are :
(a) $I(2, 0), J(2, 6), K(8, 6), L(8, 2)$
(b) $I(2, -2), J(2, -6), K(8, -6), L(8, -2)$
(c) $I(-2, 0), J(-2, 6), K(-8, 6), L(-8, 2)$
(d) $I(-2, 0), J(-2, -6), K(-8, -6), L(-8, -2)$