LUCKNOW PUBLIC SCHOOLS & COLLEGES

CLASS - XI (ISC)

MCQ EXAMINATION : 2025-26

Candidate's Name in CAPITAL letters | Sec.

Branch

Roll No. : | Candidate's Signature | Invigilator's Signature

Date :

INSTRUCTIONS FOR OMR SHEET:-

1. **Attempt ALL the questions.**
2. **Use only black or blue (ball pen) for darkening/writing in appropriate oval/box.**
3. **While darkening the oval/box it is to be ensured that these are darkened completely.**
4. **OMR sheet shall not be folded or tampered in any way.**
5. **Over writing/erasing/dual data & use of correction fluid will render OMR sheet invalid.**

M.M. : 100

Time : 2 Hrs.

MATHEMATICS

Attempt each of questions :

1. If A and B be two sets containing 3 and 6 elements respectively, then the maximum number of elements in $A \cup B$ is .....
   a) 6 b) 3
   c) 9 d) 8

2. If S = {x : x is a positive multiple of 3 less than 100}, P = {x : x is a prime number less than 20}. Then n(S)+n(P) is :
   a) 34 b) 31
   c) 33 d) 30

3. A set is a :
   a) Collection of well defined objects
   b) Collection of numbers
   c) Well defined collection of objects
   d) None of these.

4. If A={1, 2, 3, 4, 5, 6, 7} ; B = {7, 8, 9, 10} then A–B=
   a) {7, 9} b) {3, 4, 8, 10}
   c) {7} d) None of these

5. If $A = \{(x, y) : y = e^x, x \in R\}$ and $B = \{(x, y) : y = e^{-x}, x \in R\}$; then $A \cap B$
   a) {(1, 0)}
   b) {(o, 1)}
   c) {(1, 0), (0, 1)}
   d) φ

6. If f(x) = 5 – 3x and g(x) = 12x + 2, which statement is NOT true?
   a) f(0) > g(0)
   b) g(5) > f(5)
   c) f(1) > g(1)
   d) f(–1) > g(–1)

Space for rough work

7. Let A = (x, y, z} and B = {a, b, c, d}. Which one of the following is not a relation from A to B?
   a) {(x, a), (x, c)}
   b) {(y, c), (y, d)}
   c) {(z, a), (z, d)}
   d) {(z, b), (y, b), (a, d)}

8. If n(A) = 2 and total number of possible relations from set A to set B is 1024, then n(B) is :
   a) 5
   b) 20
   c) 10
   d) 512

9. The domain of the function $f:R\to R$ defined by $f(x)=\sqrt{x^2-7x+12}$ is :
   a) $(-\infty,3]\cup[4,\infty)$
   b) $(-\infty,3]\cap[4,\infty)$
   c) $(\infty,3]\cup[4,\infty)$
   d) (3, 4)

10. If S is a set with 10 eleemnts and $A=\{(x,y):x,y\in S, x\neq y\}$, then the numbers of elements in A is :
   a) 100 b) 90
   c) 80 d) 150

11. If set A has 2 elements and set B has 4 elements then how many relations are possible from A to B ?
   a) 32 b) 128
   c) 256 d) 64

12. The domain of the function f defined by f(x) = log (5 – 6x) is :
   a) $\left(-\infty,\frac{5}{6}\right)$ b) $\left(\frac{5}{6},\infty\right)$
   c) $\left(-\infty,\frac{5}{6}\right]$ d) $\left[\frac{5}{6},\infty\right)$

13. Let A = {3, 5} and B = {7, 11} and R be the relation from A to B defined and $R=\{(A,b):a\in A, b\in B, a-b \text{ is odd}\}$, then
   a) R= A × B b) $R=\varphi$
   c) $R\subset A\times B$ d) $R\subset B\times A$

14. The range of function $f(x)=\sqrt{x-1}$ is :
   a) $(0,\infty)$ b) $[0,\infty)$
   c) $[1,\infty)$ d) $(1,\infty)$

15. Let $A=\{x\in R: x\neq 0, -4\le x\le 4\}$ and $f:A\to R$ be defined by $f(x)=\frac{|x|}{x}$ for $x\in A$ then A is :
   a) {1, -1}
   b) $\{x:0\le x\le 4\}$
   c) {1}
   d) $\{x:-4\le x\le 0\}$

16. cot (270°+x).cos(360°–x) is equal to :
   a) sin x b) -sin x
   c) tan x d) -tan x

17. cos(-1710°) is :
   a) $-\sqrt{2}$ b) 1
   c) 0 d) - 1

18. The period of function cos 3x :
   a) π b) $\pi/3$
   c) 2π d) $2\pi/3$

19. In any triangle ABC, $\tan\frac{B+C-A}{2}$ is equal to :
   (a) cot A (b) -cot A
   (c) tan A (d) $-\frac{1}{2}\tan A$

20. If $\theta+\varphi=\pi/2$ then value of $(1+\tan\theta)(1+\tan\varphi)=$
   a) -2 b) 2
   c) 1 d) -1

21. If $\sin\theta=3/5$, $\cos\varphi=-12/13$, where θ and φ both lie in second quadrant, then the value of $\sin(\theta+\varphi)=?$
   a) $-20/65$ b) $-36/65$
   c) $-56/65$ d) $56/65$

22. The expression $\frac{\sin(x+y)}{\sin(x-y)}$ is equal to :

a) $\frac{\tan x+\tan y}{\tan x-\tan y}$

b) $\frac{\tan x-\tan y}{\tan x+\tan y}$

c) 1

d) -1

23. If $\sin x+\sin y=a$ and $\cos x+\cos y=b$ then the value of $\tan\frac{x+y}{2}$ is :

a) $-a/b$ b) a/b

c) b/a d) $-b/a$

24. $\sin 51^\circ+\cos 81^\circ$ is equalt o :

a) $\sin 19^\circ$ b) 0

c) $\sin 21^\circ$ d) $\cos 21^\circ$

25. If $\tan x=3/4$; $\pi<x<3\pi/2$ then value of $\sin x/2$ is :

a) $3/\sqrt{10}$ b) $-3/\sqrt{10}$

c) $1/\sqrt{10}$ d) none of these

26. If $\sec\theta+\cos\theta=2$, then value of $\sec^2\theta+\operatorname{cosec}\theta$ is :

a) 1 b) 4

c) 2 d) 3

27. In a circle of diameter 40 cm, the length of a chord is 20 cm. Then length of minor arc of the circle is :

a) $10\pi/3$ cm b) $20\pi/3$ cm

c) $20/3$ cm d) $6\pi/5$ cm

28. Let $\cos(\alpha+\beta)=4/5$ and $\sin(\alpha-\beta)=5/13$, where $0\le\alpha,\beta\le\pi/4$, then $\tan 2\alpha=$

a) $25/16$ b) $56/33$

c) $19/12$ d) $20/7$

29. The value of $\sin^2(15^\circ+x)-\sin^2(15^\circ-x)=$

a) $-1/2\cos 2x$

b) 0

c) $1/2\cos 2x$

d) $1/2\sin 2x$

30. If for real values of x, $\cos\theta=x+1/x$, then

a) θ is an acute angle

b) θ is right angle

c) No value of θ is possible

d) θ is an obtuse angle

31. The value of $\left(-\sqrt{-1}\right)^{4n-3}$, where $x\in N$ is :

a) -i b) i

c) 1 d) -1

32. The smallest positive integer n for which $(1+i)^{2n}-(1-i)^{2n}$?

a) 1 b) 2

c) 3 d) none of these

33. $|z_1+z_2|=|z_1|+|z_2|$ is possible, if

a) $z_2=\bar{z}_1$

b) $z_2=\frac{1}{z_1}$

c) $|z_1|=|z_2|$

d) none of these

34. If $x, y\in R$, then $x+iy$ is a non-real complex number, if

a) $x=0$ b) $y=0$

c) $x\neq 0$ d) $y\neq 0$

35. A real value of x satisfies the equation $\frac{3-4ix}{3+4ix}=\alpha-i\beta$, $\alpha,\beta\in R$ if $\alpha^2+\beta^2$ is :

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

36. w and w^2 are complex cube roots of unity. The value of $(1-3w+w^2)(1+w-w^2)$

a) 16 b) -16
c) -3 d) 3

37. The value of $w+w^2+\overline{w}$ is :

a) 1 b) w
c) 2w d) 0

38. If α and β are roots of the equation $4x^2+3x+7=0$, then the value of $\frac{1}{\alpha}+\frac{1}{\beta}$ is :

a) $4/7$ b) $-3/7$
c) $3/7$ d) $-3/4$

39. The least value of k which makes the roots of the equation $x^2+5x+k=0$ imaginary is :

a) 4 b) 5
c) 6 d) 7

40. The solution of the equation is $\frac{2x^2+x}{x^2-x+1}>3$ is:

a) $(-1,\infty)$ b) $(1,3)$
c) $[1,3]$ d) $(-\infty,3]$

41. If $\frac{|x-4|}{x-4}>0$ then :

a) $x\in[4,\infty)$ b) $x\in(4,\infty)$
c) $x\in(-\infty,4)$ d) $x\in(-\infty,4]$

42. If $|z+4|\le 9$, then the maimum value of $|z+1|$ is:

a) 10 b) 6
c) 0 d) 4

43. Pairs of conscuetive positive integers, both of which are larger than 5 such that their sum is less than 23 are :

a) (6, 8), (8, 10)
b) (8, 10), (10, 12)
c) (6, 8), (8, 10), (10, 12)
d) (6, 8), (10, 12)

44. The solution set of $\left|\frac{1}{x}-2\right|<4$ is :

a) $\left(-\infty,-\frac{1}{2}\right)\cup\left(\frac{1}{6},\infty\right)$

b) $\left(-\infty,\frac{1}{2}\right)\cup\left(\frac{1}{6},\infty\right)$

c) $\left(\frac{1}{6},\infty\right)$

d) $\left(-\infty,-\frac{1}{2}\right)$

45. The length of a rectangle is three times the breadth. If the minimum perimeter of the rectangle is 160 cm then :

a) breadth > 20 cm
b) length < 20 cm
c) breadth ≥ 20 cm
d) length ≤ 20 cm

46. The minimum value of the expression 3^x+3^{1-x}, $x\in R$ is :

a) 0 b) $1/3$
c) 3 d) $2\sqrt{3}$

47. The third term of G.P. is 4. the product of its first 5 terms is:

a) 4^3 b) 4^4
c) 4^5 d) none of these

48. For a, b, c to be in G.P. the value of $\frac{a-b}{b-c}$ is equal to :

a) $\frac{a}{b}$

b) $\frac{b}{c}$

c) both (a) and (b)

d) none of these

49. How many terms are there in the sequence 2, 3, 6, 9, 12 ..... , 111?

a) 37 b) 38

c) 36 d) None of these

50. a, b, c, d, e, f are in A.P. then e – c is equal to :

a) 2(c – a) b) 2(f – d)

c) d – e d) 2(d – c)

51. The sum of the first four terms of an AP is 56. The sum ofthe last four terms is 112. If its first term is 11, then find the number of terms.

a) 10 b) 11

c) 14 d) 13

52. The arithmetic mean of two numbers x and y is 3 and geometric mean is 1. Then $x^2 + y^2$ is equal to :

a) 30 b) 31

c) 32 d) 34

53. If $\frac{2}{3}=\left(x-\frac{1}{y}\right)+\left(x^2-\frac{1}{y^2}\right)+.....\text{to }\infty$ and xy = 2, then the values of x and y? with the condition x < 1.

a) $x=\frac{1}{2}, y=4$ b) $x=\frac{1}{3}, y=6$

c) $x=2, y=\frac{1}{4}$ d) none of these

54. The two geometric means between the numbers 1 and 64 are :

a) 1 and 64 b) 4 and 64

c) 2 and 16 d) 8 and 16

55. The nth term of a G.P. is 128 and the sum of its n-terms is 225. If its common ratio is 2, then the first term is :

a) 1 b) 3

c) 8 d) none of these

56. If the centroid of a triangle formed by the points (a, b), (b, c) and (c, a) is at the origin, then $a^3 + b^3 + c^3$ =

a) 0 b) abc

c) 3 abc d) -3 abc

57. The reflection of the point (4, –13) about the line 5x + y + 6 = 0 is

a) (–1, –4) b) (3, 4)

c) (0, 0) d) (1, 2)

58. If the lines x + q = 0, y – 2 = 0 and 3x + 2y + 5 = 0 are concurrent, then the value of q will be :

a) 1 b) 2

c) 3 d) 5

59. The equation of the line passing through (1, 5) and perpendicular to the line 3x –5y + 7 = 0 is

a) 5x + 3y – 20 = 0

b) 3x – 5y + 7 = 0

c) 3x – 5y + 6 = 0

d) 5x + 3y + 7 = 0

60. A line cuts off equal intercepts on the coordinate axes. The angle made by this line with the positive direction of x-axis is :

a) 15° b) 120°

c) 90° d) 135°

61. If one end of a diameter of the circle $x^2 + y^2 - 4x - 6y + 11 = 0$ is (3, 4) then find the coordinates of the other end of the diameter.

a) (2, 1) b) (1, 2)

c) (1, 1) d) none of these

62. A parabola $y^2 = 32x$ is drawn. From its focus, a line of slope 1 is drawn. The equation of line is :

a) y = x + 8 b) y = x – 4

c) y = x d) y = x – 8

63. The equation of the parabola which passes through (2, 3) and axis is along x-axis is :

a) $2y^2+9x = 0$

b) $y^2 = 9x$

c) $2y^2 - 9x = 0$

d) $y^2 = -9x$

64. The length of the latus rectum of the ellipse $3x^2 + y^2 = 12$ is :

a) 4 b) 3

c) 8 d) $4/\sqrt{3}$

65. The ecentricity of the hyperbola $4x^2 - 9y^2 = 36$ is :

a) $\sqrt{13}/3$ b) $\sqrt{14}/3$

c) $\sqrt{15}/3$ d) $\sqrt{11}/3$

66. The distance between the liens $15x + 9y + 14 = 0$ and $3y + 5x - 7 = 0$ is :

a) $\frac{35}{\sqrt{34}}$ b) $\frac{1}{3\sqrt{39}}$

c) $\frac{35}{3\sqrt{34}}$ d) $\frac{35}{2\sqrt{34}}$

67. The coordinates of the foot of the perpendicular from the point (2, 3) of the line x + y - 11) are:

a) (-6, 5) b) (5, 6)

c) (-5, 6) d) (6, 5)

68. The equation of line for which $p = 8$ and $\alpha = 150°$ as

a) $\sqrt{3}x - y + 8 = 0$

b) $\sqrt{3}x + y - 16 = 0$

c) $\sqrt{3}x - y + 16 = 0$

d) none of these

69. The lines $x + 2y - 9 = 0$ and $2x + 4y + 5$ are

a) parallel to each other

b) coincident

c) perpendicular to each other

d) none of these

70. A poin P on the y-axis which is equidistant from the points A (-4, 3) B(5, 2) is :

a) (-2, 0) b) (0, -2)

c) (2, 0) d) (0, 2)

71. ${}^{a^2-a}C_2 = {}^{a^2-a}C_4$, then a =

a) 2 b) 3

c) 4 d) none of these

72. How many different committees of 5 can be formed from 6 men and 4 women on which exact 3 men and 2 women serve?

a) 6 b) 20

c) 60 d) 120

73. How many permutations of the letters of the word 'MADHUBANI' do not begin with M but end with I ?

a) 17640 b) 14670

c) 17460 d) none of these

74. How many 3-digit numbers can be formed by using the digits 1 to 9 if no digit is repeated ?

a) 604 b) 405

c) 504 d) 300

75. How many triangles can be formed in a decagon ?

a) 10 b) 30

c) 1000 d) 120

76. Three different rings are to be worn in 4 fingers. In how many ways can this be done?

a) 12 b) 24

c) 64 d) 81

77. 12 persons meet in a room and each shakes hands with all others. How many handshakes are there ?
a) 144 b) 132
c) 72 d) 66

78. In an examination a candidate has to pass in each of the five subjects. in how many ways can be fail?
a) 5 b) 10
c) 21 d) 31

79. The number of 5 cards combination out of a deck of 52 cards, if there is exactly one ace in each combination.
a) 778320 b) 49
c) 144580 d) 260

80. ${}^{n+1}C_3 = 2 \cdot {}^{n}C_4$ then n = ...
a) 3 b) 4
c) 5 d) 6

81. The mean deviation of the data : 3 , 10 , 10 , 4 , 7 , 10 , 5 is .
a) 3 b) 2
c) 3.75 d) 2.57

On the basis of following table, answer the question no. 82 to 85 :

Marks	3	5	7	9	11	13
Number of students	6	8	15	25	8	4

82. What is the total number of students having marks not fewer than 9 ?
a) 25 b) 37
c) 12 d) 54

83. Mean marks of students :
a) 8 b) 7.5
c) 9 d) None of these

84. The value of $\sum f_i |x_i - \bar{x}|$, where rotations have their usual meanings :
a) 136 b) 137
c) 138 d) 130

85. Mean deviation of the data given in table :
a) 1.09 b) 2.0
c) 2.06 d) 2.09

86. The mean deviation of the data 3 , 10 , 10 , 4 , 7 , 10 , 5 is :
a) 3 b) 2
c) 3.75 d) 2.57

87. Select the appropriate in

$$\sum_{i=1}^{n}(x_i - \bar{x})^2 = \sum_{i=1}^{n} x_i^2 + ...$$

a) $\sum_{i=1}^{n} x_i$ b) $\sum_{i=1}^{n} x_i^2$

c) $\frac{(\sum x_i)^2}{n}$ d) $n\sum_{i=1}^{n} x_i$

88. What is the range off the series 15, 18, 13, 16, 14, 13, 14, 19, 21
a) 19 b) 8
c) 13 d) 21

89. The mean of the following data : 6, 5, 2, 4, 17, 8 is :
a) 7 b) 8
c) 5 d) 5.5

90. The mean of 100 observations is 50 and their standard deviation is 5. The sum of squares of all the observation is :
a) 50000
b) 250000
c) 252500
d) 255000

91. The modulus of (3–4i) (–5 + 12i) is :
a) –15 b) 17
c) 65 d) 12

92. How many two digit numbers are divisible by 4 ?
a) 22 b) 21
c) 25 d) 24

93. The ratio in which the line segment joining (–1, 1) and (5, 7) is divided by the line x + y = 4 is :
a) 1 : 2 internally
b) 1 : 2 externally
c) 2 : 1 internally
d) 2 : 1 externally

94. The equation of ellipse whose vertices are $(\pm 5, 0)$ and foci are $(\pm 4, 0)$ is :

a) $\frac{x^2}{7}+\frac{y^2}{16}=1$

b) $\frac{x^2}{16}+\frac{y^2}{7}=1$

c) $\frac{x^2}{9}+\frac{y^2}{25}=1$

d) $\frac{x^2}{25}+\frac{y^2}{9}=1$

95. The value of

$3\sin\frac{\pi}{6}\cdot\sec\frac{\pi}{3}-4\sin\frac{5\pi}{6}\cdot\cot\frac{\pi}{4}$ is :

a) -1 b) 0

c) 1 d) 2

96. Distance betwen the point (-3, 7, -2) and (2, 4, -1) is :

a) $\sqrt{34}$ b) $\sqrt{43}$

c) $\sqrt{31}$ d) $\sqrt{44}$

97. The co-ordinates of points in the YZ-plane are of the form .....

a) (0, b, 0)

b) (a, 0, c)

c) (0, b, c)

d) (a, 0, 0)

98. The image of (x, y, z) in XY-plane is :

a) (x, y, -z)

b) (-x, -y, z)

c) (x, 0, 0)

d) (0, y, z)

99. Length of median through A of the triangle ABC, where A (0, 0, 6), B(0, 4, 0) and C(6, 0, 0) :

a) 5 units

b) 6 units

c) 3 units

d) 7 units

100. The coordinates of the point where the line joining A(3, 4, 1) and (5, 1, 6) crosses the xy-plane.

a) $\left(\frac{13}{5}, \frac{23}{5}, 1\right)$

b) $\left(\frac{-13}{5}, \frac{-23}{5}, 0\right)$

c) $\left(\frac{13}{5}, \frac{23}{5}, 0\right)$

d) $\left(\frac{13}{5}, 0, \frac{23}{5}\right)$

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