STD: X MARKS: 80

MATHS PRACTICE PAPER-1(Full portion) WWW.MATHSTIMES.COM

TIME: 2hrs

I. Choose The Correct Answer:

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1. Given f(x) = (-1)^ is a function form N to Z. Then the range of f is
A) {1} B) Z C) N D) {1,-1}
2. Which one of the following is not true?
A) Every function represents a sequence B) A sequence may have infinitely many terms
C) A sequence is a real valued function defined on N D) A sequence may have a finite number of terms
3. The common ratio of the G.P a ^{m-n} , a ^m , a ^{m+n} is
A) a ⁿ B) a ^m C) a ⁻ⁿ D) a ^{-m}
4. The system of equation $x - 4y = 8$, $3x - 12y = 24$
A) has no solution B) has a unique solution C) has infinitely many solution
D) may or may not have a solution
5. The lowest form of the rational expansion $\frac{x^3-27}{x^2-2}$
χ^2 -9
A) x-3 B)x+3 C) $\frac{x^2+3x+9}{x+3}$ D) $\frac{x+3}{x^2-3x+9}$
6. $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$, then find the value of a, b, c, d are
A) -1, 0, 0, -1 B) 1, 0, 0, 1 C) -1, 0, 1, 0 D) 1, 0, 0, 1
7. Area of the quadrilateral formed by the points (1, 1), (0, 1), (0, 0) and (1, 0) is
A) 4 Sq.units B) 2 Sq.units C) 1 Sq.units D) 8 Sq.units
8. The equation of the straight line passing through the origin and perpendicular to the straight line $2x + 3y - 7 = 0$ is
A) $y + 5 = 0$ B) $2x + 3y = 0$ C) $3x - 2y = 0$ D) $y - 5 = 0$
9. In the figure, PA and PB are tangents to the circle drawn from an external point P. Also CD is a
tangent to the circle at Q. If PA = 8cm and CQ = 3cm, then PC is equal to
A) 5cm B) 38cm C) 11cm D) 24cm
10. The perimeter of two similar triangles are 24cm and 18cm respectively. If one side of the first triangle is
8cm, then the corresponding side of the other triangle is
A) 4cm B) 3cm C) 9cm D) 6cm 11. $9 \tan^2 \theta - 9 \sec^2 \theta =$
11. 9 an θ - 9 sec θ = A) 1 B) 0 C) 9 D) -9
12. If $x=a \sec\theta$, $y=b \tan\theta$, then the value of $\frac{x^2}{a^2} - \frac{y^2}{b^2} =$
A) 1 B) -1 C) $tan^2\theta$ D) $cosec^2\theta$
13. Two right circular cones have equal radius. If their slant heights are the ratio 4:3, then their
respective C.S.A are in the ratio
A) 4:3 B) 8:6 C) 3:4 D) 16:9
14. Standard deviation of a collection of data is $2\sqrt{2}$. If each is multiplied by 3, then the standard deviation of the new data is
A) $6\sqrt{2}$ B) $4\sqrt{2}$ C) $9\sqrt{2}$ D) $\sqrt{12}$
15. The probability that a student will score centum in mathematics is 4/5. The probability that he
will not score centum is
A) 2/5 B) 1/5 C) 4/5 D) 3/5
II. Answer any 9 out of 14 (Q.NO:16 to 29) and 30 th question is compulsory:
16. Given $P = \{a, b, c, d, e\}$, $Q = \{a, e, I, o, u\}$ and $R = \{a, c, e, g\}$. Verify the associative property of set intersection.
17. If $x = \{10, 11, 12, 13, 14\}$, $Y = \{0, 1, 2, 3, 5\}$ determine which of the following relations from X and Y are functioning?
State its type. (Give reason)
i) f_1 ={(10,1)(11,1)(12,1)(13,1)(14,1)}
ii) $f_2 = \{(10,0)(11,0)(12,1)(13,1)(14,2)\}$
$iii)f_3 = \{(10,1)(10,2)(12,3)(12,5)(14,0)\}$
18. A group of 100 candidates have their average height 163.8cm with coefficient of variation 3.2. what is the
18. A group of 100 candidates have their average height 163.8cm with coefficient of variation 3.2. what is the Standard deviation of their height?

Culture initially, how many bacteria will present at the end of 14th hour?

20. i) Find the G.C.D of x⁴ – 27a³x, (x – 3a)², ii) Find the L.C.M of 2x² – 18y², 5x²y + 15xy², x³ + 27y³

21. If the sum and product of the roots of the quadratic equation ax² – 5x + c = 0 are both equal to 10, then find the Values of a and c.

- 22. Construct 2 x 3 matrix A = $[a_{ij}] = \frac{(i 2j)^2}{2}$
- 23. Prove that $A = \begin{bmatrix} 5 & 2 \\ 7 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -2 \\ -7 & 5 \end{bmatrix}$ are inverse to each other under matrix multiplication
- 24. Let A (-6, -5) and B (-6, 4) be two points such that a point P on the line AB satisfies AP= 2 AB. Find the Point P.
- 25. If the points A (-1, 3), B (2, p) and C (5, -1) are collinear, find the value of p.
- 26. AB and CD are two chords of a circle which intersect each other externally at P if AB = 4cm BP = 5cm And PD = 3cm, then find CD.
- 27. A number is selected at random from integers 1 to 100. Find the probability that it is i) a perfect square ii) not a perfect cube.
- 28. Volume of a hollow sphere is $\frac{11352}{7}$ cm³. If the outer radius is 8cm, find the inner radius

of the sphere. (Take π = 22/7)

- 29. Let O and C be the centre of the base and the vertex of the right circular cone. Let B be any point on the circumference of the base. If the radius of the cone is 6cm and if $\underline{OBC} = 60^{\circ}$, then find the height and C.S.A.
- 30. a) Prove the identity $(\sin \theta + \csc \theta)^2 + (\cos \theta + \sec \theta)^2 = 7 + \tan^2 \theta + \cot^2 \theta$.

(OR)

b) Find the sum of first 20 terms of the arithmetic series in which 3^{rd} term is 7 and 7^{th} term is 2 more than three times its 3^{rd} term.

III. Answer any 8 out of 14 (Q.NO:31 to 44) and 45th question is compulsory:

9X5 = 45

- 31. Using Venn diagram, verify $(A \cap B)' = A' \cup B'$
- 32. An advertising agency finds that, of its 170 clients, 115 use television, 110 use radio and 130 use magazines. Also, 85 use television and magazines, 75 use television and radio, 95 use radio and magazines, 70 use all the three. Find i) How many do not use any of the three? ii) How many use two types only?
 - iii) How many use television and magazine but not radio? iv) How many use television but not magazine?
- 33. Find the sum to n terms of the series 7+77+777+...
- 34. Find the total area of 12 squares whose sides are 12cm, 13cm, 14cm 23cm respectively.
- 35. Find the G.C.D of the following polynomials $3x^4 + 6x^3 12x^2 24x$ and $4x^4 + 14x^3 + 8x^2 + 8x$.
- 36. If $ax^4 bx^3 + 40x^2 + 24x + 36$ is a perfect square, then find the value of 'a' and 'b'.
- 37. A die is thrown twice. Find the probability that at least one of the two throws comes up with the number 5. (use addition theorem).
- 38. If $A = \begin{bmatrix} -2 \\ 4 \\ 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 3 & -6 \end{bmatrix}$, then verify that $(AB)^T = B^T A^T$
- 39. The vertices of a triangle ABC are A (1, 8), B (-2, 4), C (8, -5). If M and N are the midpoints of AB and AC, Find the slope of MN and hence verify that MN is parallel to BC.
- 40. Find the equation of the line passing through the point (9, -1) and having its x-intercept thrice as its y-intercept.
- 41. Find the variance of the following distribution

Class	20-24	25-29	30-34	35-39	40-44	45-49
interval						
frequency	15	25	28	12	12	8

- 42. From the top and foot of a 40m high tower, the angles of elevation of the top of a light house are found to be 30° and 60° respectively. Find the height of the light house. Also find the distance of the top of the light house from the foot of the tower.
- 43. The external surface area of a hollow cylinder is $540\pi\text{cm}^2$. Its internal diameter is 16cm and height is 15cm. Find the T.S.A.
- 44. A cuboid shaped slab of iron whose dimensions are 55cm X 40cm X 15cm is melted and recast into a pipe. The outer diameter and thickness of the pipe are 8cm and 1cm respectively. Find the length of the pipe. (Take π =22/7).
- 45. a) State and prove basic proportionality theorem.

(OR

b) A car left 30 minutes later than the scheduled time. In order to reach its destination 150km away in time, It has to increase its speed by 25km/hr from its usual speed. Find its usual speed.