SR-NKL

SECOND REVISION TEST - 2023

10 Std
Time: 3.00 Hrs

MATHEMATICS

Reg No.

Marks : 100

Namakkal district

PART - I

Answer All the questions.   14 X 1 = 14
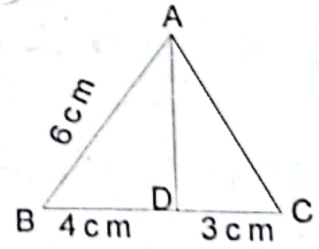
1. If there are 1024 relations from a set A = { 1, 2, 3, 4, 5 } to a set B. Then the number of elements in B
   - a) 3
   - b) 2
   - c) 4
   - d) 8

2. If $f : A \to B$ is a bijective function and if n (B)=7 then n(A) is equal to
   - a) 7
   - b) 49
   - c) 1
   - d) 14

3. If HCF of 65 and 117 is expressible in the form of 65m-117,then the value of m is
   - a) 4
   - b) 2
   - c) 1
   - d) 3

4. The value of $(1^3+2^3+3^3+\ldots\ldots+15^3) - (1+2+3+\ldots\ldots+15)$
   - a) 14400
   - b) 14200
   - c) 14280
   - d) 14520

5. Which of the following should be added to make $x^4 + 64$ a perfect square
   - a) $4x^2$
   - b) $16x^2$
   - c) $8x^2$
   - d) $-8x^2$

6. If number of columns and rows are not equal in a matrix then it is said to be a
   - a) diagonal matrix
   - b) rectangular matrix
   - c) square matrix
   - d) identity matrix

7. In $\triangle LMN$, $\lfloor L = 60^0$, $\lfloor M = 50^0$, If $\triangle LMN \sim \triangle PQR$ then the value of $\lfloor R$ is
   - a) 40^0
   - b) 70^0
   - c) 30^0
   - d) 110^0

8. The area of triangle formed by points (-4, 0), (0,-4) and (4,0) is
   - a) 0 sq.units
   - b) 16 sq.units
   - c) 4 sq units
   - d) None of those

9. If slope of the line PQ is $\dfrac{1}{\sqrt{3}}$ then slope of the perpendicular bisector of PQ is
   - a) $\sqrt{3}$
   - b) $-\sqrt{3}$
   - c) $\dfrac{1}{\sqrt{3}}$
   - d) 0

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10. If $\sin\theta = \cos\theta$, then $2\tan^2\theta + \sin^2\theta - 1$ is equal to

a) $\frac{-3}{2}$ b) $\frac{3}{2}$ c) $\frac{2}{3}$ d) $\frac{-2}{3}$

11. The curved surface area of a height circular cone of leight 15 cm and base diameter 16 cm is

a) $60\,\pi$ cm²   b) $68\,\pi$ cm²   c) $120\,\pi$ cm²   d) $136\,\pi$ cm²

12. A Spherical ball of radius r_1 units is melted to make 8 new identical balls each of radius r_2 units Then $r_1 : r_2$ is

a) 2 : 1   b) 1 : 2   c) 4 : 1   d) 1 : 4

13. Variance of first 20 natural number is

a) 32.25   b) 44.25   c) 33.25   d) 30

14. which of the following is incorrect?

a) $P(A) > 1$ b) $0 \le P(A) \le 1$ c) $P(\phi) = 0$ d) $P(A) + P(\overline{A}) = 1$

PART - II

Answer any 10 Questions. Question No.28 is compulsory.   **10 X 2 = 20**

15. Let A = { 1, 2, 3 } and {B = x/x is a prime number less than 10}. Find AXB and BXA

16. If A = { -2,-1,0,1,2 } and f: A → B is an onto function defined by

f(x) = $x^2 + x + 1$ then find B.

17. Solve $3x - 2 = 0$ (mod 11).

18. Find the LCM of $(5x - 10)$, $(5x^2 - 20)$.

19. Find the quaratic equation whose sum and product of roots are -9, 20

$$x^2 - (\alpha + \beta)x + \alpha\beta = 0 \Rightarrow x^2 + 9x + 20 = 0$$

20. If $A = \begin{bmatrix} 5 & 4 & 3 \\ 1 & -7 & 9 \\ 3 & 8 & 2 \end{bmatrix}$ then find the transpose of A

21. In the Figure AD is the bisector of $\angle$A If BD=4cm, DC=3cm AB=6cm, Find AC

22. If the three point (3,-1) (a,3) and (1,-3) are collinear. Find the value of a

23. Find the equation of a line passing throught the point (3,-4), and having slope $\frac{-5}{7}$

24. From the top of a rock $50\sqrt{3}$ m high Thes angle of depression of a car on the ground is observed to be 30^0. Find the distance of the car from the rock.

25. Find the diameter of a sphere whose surface area is 154 m² (Eg.7.8)(PN 278)

26. It the lange and the smallest value of a set of data area are 36.8 and 13.4 respectively, then find the largest value.

27. Two dice are rolled together Find the probability of getting a doublet?

PART - III

Answer any 10 Questions. Question No.42 is compulsory. 10 X 5 = 50

29. Let A = { $x \in w / x < 2$ }, B = { $x \in N / 1 < x \leq 4$} and C={ 3, 5 } verify
Ax(BnC)=(AxB)n(AxC) (Ex 1.1)(6 ii) (PN 6)

30. If $f(x)=x^2, g(x)=2x$ and $h(x)=x+4$ slow that (fog) oh = (fo)(goh) (1.5)(8 ii)(PN 34)

31. In a G.P the 9th term is 32805 and 6th term is 1215. Find the 12th term (2.7)6 (PN 73)

32. Rekha has 15 square colour papers of size 10 cm, 11 cm, 12 cm..................24cm. How much area can be decorated with these colour papers? (2.9)6 (PN 81)

33. If $36x^4 - 60x^3 + 61x^2 - mx + n$ is a perfect square Find the values of m and n (3.8)(3) (PN - 106)

34. If $A = \begin{pmatrix} 1 & 1 \\ -1 & 3 \end{pmatrix}, B = \begin{pmatrix} 1 & 2 \\ -4 & 2 \end{pmatrix}, C = \begin{pmatrix} -7 & 6 \\ 3 & 2 \end{pmatrix}$ verify that A(B+C)=AB+AC (Eg 3.72) (PN 152)

35. State and prove angle bisecetor theroram (4.724)

36. A triangular slaped glass of with vertices at A=(-5,-4), B=(1, 6) and C = (7, -4) (Ex 5.1) has to be painted. It one bucket of paint covers 6 square feet, how many buckels (10) of paint will be required to paint the whole glass if only one coat of paint is applied (PN 212)

37. A (-3, 0) B (10, -2) and C (12, 3) are the vertices of a triangle ABC. Find the equation of the altitude through A. (5.4) 7 (PN - 235)

38. If $\sin\theta(1+\sin^2\theta)=\cos^2\theta$ then prove that $\cos^6\theta - 4\cos^4 + 8\cos^2\theta = 4$ (6 ii)(9 ii)(PN 250)

39. The radius and height of cylinder are in the ratio 5 :7 and its curred surface area is 5500 sq cm Find its radius and height (Ex 7.1) (1) (PN 282)

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40. A solid sphere of radius 6 cm is melted into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 5 cm and its height is 32 cm, then find the thickness of the cylinder [Ex 7.4) 7 (PN 297)

41. The marks scored by 10 students in a class test are 25, 29, 30,33,35,37,38,40,44, 48 Find the standard deviation [Eg 8.6](PN 308)

42. There unbiased coins are tossed once. Find the probability of getting at must .2 tails or atleast 2 heads.

PART - IV

Answer the following.   2 X 8 = 16

43. a) Construct a $\triangle PQR$ such that QR = 5cm $\lfloor P = 30^0$ and the altitude from P to QR of length 4.2 cm

(OR)

b) Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the tangents PA and PB to the circle and measure their lengths.

44. a) Draw the graph of $y = x^2 - 4$ and hence solve $x^2 - x - 12 = 0$

(OR)

b) Graph the following linear function $y = \dfrac{1}{2} x$ Identify the constant of variation and verifty it with the graph. Also find y when $x = 9$
ii) find x when y = 7.5

1

2

2.

22

23

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