Sri Raghavendra Tuition Center

REVIEW TEST

10th Standard

Maths

Date : 19-07-24

Reg.No. : | | | | | | |

Exam Time : 03:00 Hrs

Total Marks : 100

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I. Multiple Choice Question 14 x 1 = 14

1) If n(A x B) = 6 and A = {1,3} then n(B) is

(a) 1 (b) 2 (c) 3 (d) 6

2) If the 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

3) A = {a, b, p}, B = {2, 3}, C = {p, q, r, s} then n[(A U C) x B] is

(a) 8 (b) 20 (c) 12 (d) 16

4) If in triangles ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when

(a) $\angle B = \angle E$ (b) $\angle A = \angle D$ (c) $\angle B = \angle D$ (d) $\angle A = \angle F$

5) The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

(a) 2025 (b) 5220 (c) 5025 (d) 2520

6) If (x - 6) is the HCF of x^2 - 2x - 24 and x^2 - kx - 6 then the value of k is

(a) 3 (b) 5 (c) 6 (d) 8

7) Graph of a linear equation is a _____

(a) straight line (b) circle (c) parabola (d) hyperbola

8) A tangent is perpendicular to the radius at the

(a) centre (b) point of contact (c) infinity (d) chord

9) How many tangents can be drawn to the circle from an exterior point?

(a) one (b) two (c) infinite (d) zero

10) If a letter is chosen at random from the English alphabets {a, b,...,z}, then the probability that the letter chosen precedes x

(a) $\frac{12}{13}$ (b) $\frac{1}{13}$ (c) $\frac{23}{26}$ (d) $\frac{3}{26}$

11) If sin θ = cos θ, 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) $\frac{-2}{3}$

12) The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be

(a) 12 cm (b) 10 cm (c) 13 cm (d) 5 cm

13) A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

(a) $\frac{3}{10}$ (b) $\frac{7}{10}$ (c) $\frac{3}{9}$ (d) $\frac{7}{9}$

14) If are event occurs surely, then its probability is _____

(a) 0 (b) 1 (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

II. Answer any 10 Questions compulsory answered 27 th question 10 x 2 = 20

15) Let A = {1, 2, 3, 4,..., 45} and R be the relation defined as "is square of a number" on A. Write R as a subset of A x A. Also, find the domain and range of R.

16) Let f(x) = 2x + 5. If $x \neq 0$ then find $\frac{f(x+2)-f(2)}{x}$.

17) If $13824 = 2^a \times 3^b$ then find a and b.

18) Find the value of

$1 + 2 + 3 + ...+ 50$

19) Find the square root of the following expressions

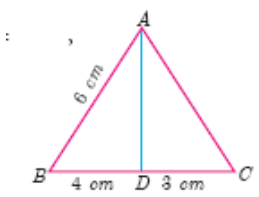
$256(x - a)^8 (x - b)^4 (x - c)^{16} (x - d)^{20}$

20) If $A = \begin{bmatrix} 5 & 2 & 2 \\ -\sqrt{17} & 0.7 & \frac{5}{2} \\ 8 & 3 & 1 \end{bmatrix}$ then verify $(A^T)^T = A$

21) Check whether the following sequences are in A.P.

9, 13, 17, 21, 25,... ,

22) In the figure, AD is the bisector of ∠A. If BD = 4 cm, DC = 3 cm and AB = 6 cm, find AC.



23) prove that $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}} = \text{cosec } \theta + \cot\theta$

24) The external radius and the length of a hollow wooden log are 16 cm and 13 cm respectively. If its thickness is 4 cm then find its T.S.A.

25) Find the range and coefficient of range of the following data. 63, 89, 98, 125, 79, 108, 117, 68

26) If P(A) = 0.37, P(B).= 0.42, $P(A \cap B) = 0.09$ then find P(AUB).

27) Use Euclid's algorithm to find the HCF of 4052 and 12756.

III. Answer any 10 Question compulsory answered 40th question 10 x 5 = 50

28) If $f(x) = x^2$, g(x) = 3x and h(x) = x - 2, Prove that (f o g) o h = f o (g o h).

29) A function f: [-5,9] ⟶ R is defined as follows:

$$f(x) = \begin{cases} 6x + 1 & \text{if } -5 \leq x < 2 \\ 5x^2 - 1 & \text{if } 2 \leq x < 6 \\ 3x - 4 & \text{if } 6 \leq x \leq 9 \end{cases}$$

Find

i) f(-3) + f(2)

ii) f(7) - f(1)

iii) 2f(4) + f(8)

iv) $\frac{2f(-2)-f(6)}{f(4)+f(-2)}$

30) Find the sum of the following series

$10^3 + 11^3 + 12^3 +....+ 20^3$

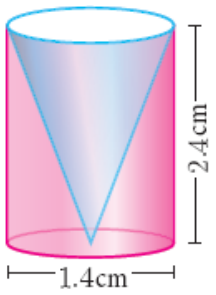
31) In a three-digit number, when the tens and the hundreds digit are interchanged the new number is 54 more than three times the original number. If 198 is added to the number, the digits are reversed. The tens digit exceeds the hundreds digit by twice as that of the tens digit exceeds the unit digit. Find the original number.

32) If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ show that $A^2 - (a + d) A = (bc - ad)I_2$

33) Pythagoras Theorem

34) Two ships are sailing in the sea on either sides of a lighthouse as observed from the ships are 30° and 45° respectively. if the lighthouse is 200 m high, find the distance between the two ships. $(\sqrt{3} = 1.732)$

35) From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and base is hollowed out. Find the total surface area of the remaining solid.



36) Two dice are rolled together. Find the probability of getting a doublet or sum of faces as 4.

37) Two dice are rolled once. Find the probability of getting an even number on the first die or a total of face sum 8.

38) Let A = {1,2,3,4} and B = { 2, 5, 8, 11,14} be two sets. Let f: A ⟶ B be a function given by f(x) = 3x − 1. Represent this function

(i) by arrow diagram

(ii) in a table form

(iii) as a set of ordered pairs

(iv) in a graphical form

39) prove that $\frac{sinA}{secA+tanA-1} + \frac{cosA}{cosecA+cotA-1} = 1$

40) Find the square root of the following polynomials by division method

$121x^4 - 198x^3 - 183x^2 + 216x + 144$

All the best

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