

FIRST QUARTERLY TEST AUGUST 2024

CLASS : I PUC

SUBJECT : BASIC MATHEMATICS (75)

Max. Marks : 40

TIME : 1 Hr. 30 Mins

PART-A

I Answer all the questions :

5x1=5

- 1) The real part of $4-i$ is
a) -1 b) 4 c) 1 d) -4
- 2) $(x^{1/2} + y^{1/2})(x^{1/2} - y^{1/2}) =$
a) $\sqrt{x} - \sqrt{y}$ b) $y-x$ c) $x+y$ d) $x-y$
- 3) The average age of 10 boys in a class is 13 years. The sum of their ages is
a) 13 b) 130 c) 10 d) 103
- 4) The value of $\sin^2 \theta \cdot \sec^2 \theta$ is
a) $\sec^2 \theta - 1$ b) $\operatorname{cosec}^2 \theta - 1$ c) $\tan^2 \theta - 1$ d) $\cot^2 \theta - 1$
- 5) The co-ordinates of the reflection of the point $(-3, 5)$ with respect to y-axis is
a) $(5, -3)$ b) $(-5, 3)$ c) $(3, 5)$ d) $(-3, 5)$

II For question numbers 6 to 10 choose appropriate answer from the answers below:
[4, 576, $\sin^2 A$, 6, $\cos^2 A$, 51]

5x1=5

- 6) The LCM of 72 and 64 is _____.
- 7) The value of $(5)^{5^0} + (5^2)^0$ is _____.
- 8) The marks obtained in mathematics are 88, 71, 35, 33 and 28. The average marks is _____.
- 9) The value of $\tan^2 A (1 - \sin^2 A)$ is _____.
- 10) The distance of the point $(3, 4)$ from the x-axis is _____.

PART-B

III Answer any Four questions:

4x2=8

- 11) If the product of two numbers is 216 and their LCM is 36. Find their HCF.

12) Simplify : $\frac{(2^2)^0 - 2^{(3^0)}}{(2^0)^6 - 2^{(2^2)}}$

- 13) Ramesh has 4 Kannada, 5 English and 6 Maths books. Each Kannada book cost ₹ 8.50, English ₹ 10.50 and Maths ₹ 15.00. Find the average cost per book of all three subjects.
- 14) Ram and Rahim went up a hill at a speed of 20 Km/h and both of them came tumbling down the same distance at a speed of 30 Km/h. Find the average speed for the round trip.
- 15) The angles of a triangle are in the ratio 3:4:5. Find them in radians.
- 16) Find the value of 'k' if the distance between $(2k, 5)$ and $(-k, -4)$ is $\sqrt{90}$.

(PTO)

PART-C

IV Answer any FOUR questions :

4x3=12

- 17) Prove that $\sqrt{2}$ is an irrational number.
- 18) Find the greatest integer which divides 42, 52, 86 leaving remainder 6, 4 and 2 respectively.
- 19) If $3^x = 5^y = 15^z$. Show that $z(x + y) = xy$.
- 20) A book seller bought 228 note books at an average price of ₹ 8.50 in which 80 books he bought at ₹ 7.50 each and 84 books at ₹ 10.50 each. Find the price of the remaining books per unit.
- 21) Prove that $\frac{1}{1+\sin A} + \frac{1}{1-\sin A} = 2 \sec^2 A$.
- 22) Find the co-ordinates of the point P which divides the line joining the points (2, 4) and (-3, 10) in the ratio 1 : 4 internally.

PART-D

V Answer any TWO questions:

2x5=10

- 23) Find the number of positive divisions and sum of all positive divisors of 825.
- 24) If $a^x = bc$, $b^y = ca$, $c^z = ab$, show that $xyz = x + y + z + 2$.
- 25) Solve : $2^{2x} - 6 \cdot 2^x + 8 = 0$.
- 26) If $x = ar \sin A \cos B$, $y = br \sin A \sin B$ and $z = cr \cos A$ then prove that $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = r^2$.
- 27) Show that the points (2, -2), (8, 4), (5, 7) and (-1, 1) are the vertices of a rectangle.
