

FIRST QUARTERLY TEST AUGUST 2025

CLASS : I PUC

SUBJECT : MATHEMATICS (35)

Max. Marks : 40

TIME : 1 Hr. 30 Mins

PART-A

I Answer all the multiple choice questions:

7x1=7

- 1) The solution set of the equation $x^2 + x - 2 = 0$ is
a) $\{1, -2\}$ ✓ b) $\{-1, 2\}$ c) $\{1, 2\}$ d) $\{-1, -2\}$
- 2) If $n[P(A)] = 32$ where $P(A)$ is power set, then number of elements in set A is
a) 3 b) 2^5 ✓ c) 5 d) 5^2
- 3) The value of $\cos\left(-\frac{\pi}{3}\right)$ is
a) $\frac{1}{2}$ ✓ b) $-\frac{1}{2}$ c) $\frac{\sqrt{3}}{2}$ d) $-\frac{\sqrt{3}}{2}$
- 4) If $f(x) = 2x - 5$ then $f(7)$ is
a) 14 b) -19 c) 9 ✓ d) 19
- 5) Range of $\sin x$ is
a) $(-1, 1)$ b) $[-1, 1]$ ✓ c) $(-\infty, \infty)$ d) $R - (-1, 1)$
- 6) $n(A) = p$ and $n(B) = Q$ then $n(A \times B)$ is
a) P^Q b) $\frac{P}{Q}$ c) Q^P d) PQ ✓
- 7) The conjugate of $-i$ is
a) $-i$ b) i ✓ c) 1 d) -1

II Fill in the blanks by choosing the appropriate answer from those given in the bracket: (0, 1, 5, -1)

3x1=3

- 8) $(x + 1, y - 2) = (3, 1)$ then value of $x + y =$ 5.
- 9) $\cos \frac{3\pi}{2} =$ 0.
- 10) $i^4 =$ 1.

PART-B

III Answer any THREE of the following :

3x2=6

- 11) Find the union and intersection of $A = \{a, e, i, o, u\}$ $B = \{a, b, c\}$ ✓
- 12) Find the angle in radians through which a pendulum swings if its length is 75 cm and the tip describes an arc of length 10 cm. ✓
- 13) Find the domain and range of $f(x) = -|x|$
- 14) Prove that $\sin 2x = \frac{2 \tan x}{1 + \tan^2 x}$
- 15) Express in $a + ib$ form $3(7 + i7) + i(7 + i7)$ ✓

(PTO)

PART-C

3x3=9

IV Answer any THREE questions :

- 16) Find the domain and range of the relation
 $R = \{(x, x + 5) : x \in \{0, 1, 2, 3, 4, 5\}\}$ ✓
- 17) Let $A = \{1, 2, 3, 4, 5, 6\}$, $B = \{2, 4, 6, 8\}$
Find (a) $A - B$ (b) $B - A$ (c) $A \times B$ ✓
- 18) $f(x) = x + 1$ $g(x) = 2x - 3$ be two functions from R to R , then
Find (a) $f + g$ (b) $f - g$ and (c) $\frac{f}{g}(x)$ ✓
- 19) Prove that $\cos 3x = 4 \cos^3 x - 3 \cos x$.
- 20) If $Z_1 = 2 - i$ $Z_2 = 1 + i$

Find $\left| \frac{Z_1 + Z_2 + 1}{Z_1 - Z_2 + 1} \right|$

PART-D

V Answer any THREE questions of the following :

3x5=15

- 21) Define identity function. Draw its graph also find its domain and range.
- 22) If $\cos = -\frac{3}{5}$, x lies in third quadrant find the values of other five trigonometric functions. ✓
- 23) Prove Geometrically that $\cos(x + y) = \cos x \cos y - \sin x \sin y$. ✗✗
- 24) $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ $A = \{2, 4, 6, 8\}$, $B = \{2, 3, 5, 7\}$ verify $(A \cup B)' = A' \cap B'$ ✓
- 25) Define signum function draw the graph of it and write the domain and range.

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