

Roll No _____ (To be filled in by the candidate)

MATHEMATICS (Academic Sessions 2019 – 2021 to 2022 – 2024)

Q.PAPER – I (Objective Type) 223-1st Annual-(INTER PART – I) Time Allowed : 30 Minutes

GROUP – I

Maximum Marks : 20

PAPER CODE = 6195

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	Sum of cube roots of unity is : (A) $2i$ (B) -1 (C) 0 (D) 1
2	If ${}^nP_2 = 30$ then $n =$: (A) 5 (B) 6 (C) 7 (D) 8
3	The modulus of complex number $1-i\sqrt{3}$ is : (A) $1+i\sqrt{3}$ (B) $-1+i\sqrt{3}$ (C) 2 (D) $\frac{1}{2}$
4	Arithmetic mean between $\sqrt{2}$ and $3\sqrt{2}$ is : (A) $2\sqrt{2}$ (B) $\sqrt{6}$ (C) $\frac{3}{\sqrt{2}}$ (D) $\frac{\sqrt{2}}{2}$
5	If a function $f: A \rightarrow B$ is such that $\text{Ran } f \subseteq B$ i.e. $\text{Ran } f \neq B$ then f is called : (A) Into function (B) Onto function (C) Injective function (D) Bijective function
6	Partial fractions of $\frac{x^2+1}{(x+1)(x-1)}$ are of the type : (A) $\frac{A}{x+1} + \frac{B}{x-1}$ (B) $1 - \frac{A}{x+1} - \frac{B}{x-1}$ (C) $1 + \frac{A}{x+1} + \frac{B}{x-1}$ (D) $\frac{Ax+B}{x+1} + \frac{C}{x-1}$
7	Quadratic equation whose roots are 2 and 3 : (A) $x^2-5x+6=0$ (B) $x^2+5x+6=0$ (C) $x^2-5x-6=0$ (D) $x^2+5x-6=0$
8	If A is a square matrix of order 3 then $ KA =$: (A) $K A $ (B) $K^3 A $ (C) $K^2 A $ (D) $ A $
9	7 th term of the sequence 2, 6, 11, 17, ---- is : (A) 24 (B) 26 (C) 30 (D) 32
10	The trivial solution of homogeneous linear equation is : (A) $(0, 0, 1)$ (B) $(0, 1, 0)$ (C) $(1, 0, 0)$ (D) $(0, 0, 0)$
11	Domain of the function $y = \cot x$ is : (A) $-\infty < x < +\infty$ (B) $-\infty < x < +\infty, x \neq \frac{(2n+1)\pi}{2}, n \in \mathbb{Z}$ (C) $-1 \leq x \leq 1$ (D) $-\infty < x < +\infty, x \neq n\pi, n \in \mathbb{Z}$

(Turn Over)

(2)

1-12	If A and B are overlapping events then $P(A \cup B) = \dots$: (A) $P(A) + P(B)$ (B) $1 - P(A)$ (C) $P(A) + P(B) - P(A \cap B)$ (D) $1 - P(B)$
13	The solutions of $\operatorname{cosec} \theta = 2$ which lie in $[0, 2\pi]$: (A) $\frac{4\pi}{3}, \frac{5\pi}{3}$ (B) $\frac{2\pi}{3}, \frac{4\pi}{3}$ (C) $\frac{\pi}{4}, \frac{3\pi}{4}$ (D) $\frac{\pi}{6}, \frac{5\pi}{6}$
14	$\cos\left(\frac{\pi}{2} - \beta\right) = \dots$: (A) $-\sin \beta$ (B) $\sin \beta$ (C) $\cos \beta$ (D) $-\cos \beta$
15	$\cos^{-1}(-x) = \dots$: (A) $\cos^{-1} x$ (B) $-\cos^{-1} x$ (C) $\pi - \cos^{-1} x$ (D) $2\pi - \cos^{-1} x$
16	2nd term in the expansion of $\left(\frac{a}{2} - \frac{2}{a}\right)^6$ is : (A) $\frac{a^6}{64}$ (B) $\frac{15}{4}a^2$ (C) -20 (D) $-\frac{3}{8}a^4$
17	If $\sin \theta = \frac{12}{13}$ and terminal arm is in quad - I then $\cos \theta = \dots$: (A) $\frac{13}{5}$ (B) $\frac{-5}{13}$ (C) $\frac{5}{13}$ (D) $\frac{-13}{5}$
18	In any triangle with usual notations $\sin \frac{\gamma}{2} = \dots$: (A) $\sqrt{\frac{(s-a)(s-b)}{ab}}$ (B) $\sqrt{\frac{(s-b)(s-c)}{bc}}$ (C) $\sqrt{\frac{(s-c)(s-a)}{ca}}$ (D) $\sqrt{\frac{s(s-c)}{ab}}$
19	If n is odd in the expansion of $(a+x)^n$ then number of middle term are : (A) 2 (B) 3 (C) 4 (D) 1
20	In law of cosine if $\beta = 90^\circ$ then it reduces to : (A) $b^2 + c^2 = a^2$ (B) $c^2 + a^2 = b^2$ (C) $a^2 + b^2 = c^2$ (D) $c^2 - a^2 = b^2$