

Roll No. _____ to be filled in by the candidate.

(For all sessions)

Paper Code	6	1	9	1
------------	---	---	---	---

Mathematics (Objective Type)

Time: 30 Minutes

Marks: 20

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A,B,C & D to each question are given. Which answer you consider correct, fill the corresponding circle A,B,C or D given in front of each question with Marker or pen ink on the answer sheet provided.

1-1. If $z = \cos \theta + i \sin \theta$, then $|z|$ is equal to:

(A) 0 (B) 1 (C) 2 (D) 3

2. For any two subsets A and B of set \cup , then $(A \cup B)'$ is equal to:

(A) $A \cup B'$ (B) $A \cap B'$ (C) $A' \cup B'$ (D) $A' \cap B'$

3. If "A" is a square matrix and $(\bar{A})^t = -A$, then "A" is called:

(A) Skew Symmetric (B) Symmetric (C) Skew Hermitian (D) Hermitian

4. If $A = \begin{bmatrix} 4 & x & 3 \\ 7 & 3 & 6 \\ 2 & 3 & 1 \end{bmatrix}$ is a singular matrix, then 'x' is equal to:

(A) 3 (B) 4 (C) 6 (D) 7

5. If α and β are roots of $ax^2 + bx + c = 0$, then $\alpha \cdot \beta$ is equal to:

(A) $-\frac{b}{a}$ (B) $\frac{a}{b}$ (C) $\frac{c}{a}$ (D) $\frac{a}{c}$

6. If "w" is a cube root of unity, then $(1+w-w^2)(1-w+w^2)$ will be equal to:

(A) 3 (B) 4 (C) 2 (D) 1

7. If $\frac{3}{(x-1)(x+2)} = \frac{1}{x-1} + \frac{A}{x+2}$, then "A" is equal to:

(A) -1 (B) 3 (C) 2 (D) 4

8. The n^{th} root of product of n Geometric Means between a and b is equal to:

(A) $(ab)^{\frac{1}{n}}$ (B) $a^n b^n$ (C) $n\sqrt{ab}$ (D) $\sqrt[n]{ab}$

9. If in an A.P; $a_{n-3} = 2n-5$, then a_n will be equal to:

(A) $2n+1$ (B) $2n-1$ (C) $n+1$ (D) $n-1$

10. $\frac{n!}{(n-r)!r!}$ is equal to:

(A) ${}^r C_n$ (B) ${}^r P_n$ (C) ${}^n C_r$ (D) ${}^n P_r$

11. Number of signals given by 5 flags of different colours using 3 flags at a time equals.

(A) 30 (B) 40 (C) 50 (D) 60

12. Sum of even co-efficient in the expansion of $(1+x)^n$ equals.

(A) 2^{n+1} (B) 2^{n-1} (C) 2^n (D) 2^{1-n}

13. Third term in the expansion of $(1-2x)^{\frac{1}{3}}$ is equal to:

(A) $-\frac{9x^2}{4}$ (B) $\frac{9x^2}{4}$ (C) $\frac{4x^2}{9}$ (D) $-\frac{4x^2}{9}$

14. The area of a sector of circular region of radius r and angle θ is equal to:

(A) $\frac{1}{2}r\theta^2$ (B) $\frac{1}{2}r^2\theta$ (C) $r\theta^2$ (D) $r^2\theta$

15. If $6\cos^2\theta + 2\sin^2\theta = 5$, then $\tan^2\theta$ will be equal to:

(A) $\frac{3}{2}$ (B) 3 (C) $\frac{1}{3}$ (D) $\frac{2}{3}$

16. Period of $\sin\frac{x}{5}$ is equal to:

(A) 10π (B) 5π (C) 2π (D) $\frac{2\pi}{5}$

17. In an oblique triangle, if $a = 200$; $b = 120$ and included angle $\gamma = 150^\circ$, then its area will be

(A) 6000 (B) 5000 (C) 2000 (D) 12000

18. If " R " is the circum-radius, then its value is:

(A) $\frac{ac}{4\Delta}$ (B) $\frac{ab}{4\Delta}$ (C) $\frac{abc}{4\Delta}$ (D) $\frac{abc}{\Delta}$

19. The value of $\sin\left(\cos^{-1}\frac{\sqrt{3}}{2}\right)$ is equal to:

(A) 1 (B) -1 (C) $-\frac{1}{2}$ (D) $\frac{1}{2}$

20. The solution of $\cos ec\theta = 2$ in interval $[0, 2\pi]$ is equal to:

(A) $\frac{\pi}{6}, \frac{7\pi}{6}$ (B) $\frac{\pi}{6}, \frac{5\pi}{6}$ (C) $\frac{\pi}{3}, \frac{5\pi}{6}$ (D) $\frac{\pi}{3}, \frac{\pi}{6}$