

Mathematics(Objective)

(For All Sessions)

Group-I

Time: 30 Minutes

Marks : 20

Note: Write Answers to the Questions on the objective answer sheet provided. Four possible answers A, B, C and 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 $\frac{abc}{4\Delta} =$

- (A) r_1 (B) r (C) R (D) Δ

2. In any ΔABC $\sqrt{\frac{S(S-c)}{ab}}$ is:

- (A) $\cos \alpha/2$ (B) $\cos \beta/2$ (C) $\cos \gamma/2$ (D) $\cos \alpha$

3. $\cos(\tan^{-1}0) =$

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

4. Solution of $1 + \cos x = 0$ in $[0, 2\pi]$ is:

- (A) π (B) $\frac{\pi}{2}$ (C) $\frac{3\pi}{2}$ (D) $\frac{5\pi}{2}$

5. The set $\{1\}$ possess closure property under:

- (A) Addition (B) Multiplication (C) Subtraction (D) Both A & B

6. A function $f: A \rightarrow B$ is called an onto function if:

- (A) Range of $f = A$ (B) Range of $f \neq A$ (C) Range of $f = B$ (D) Range of $f \neq B$

7. If $A = \begin{bmatrix} 1 & 2 & -3 \\ 0 & -2 & 0 \\ -2 & -2 & 1 \end{bmatrix}$ then $|A| =$

- (A) 4 (B) 7 (C) 10 (D) 13

8. If order of a matrix "A" is $m \times n$ and order of matrix "B" is $n \times p$ then order of product of matrices AB is:

- (A) $m \times p$ (B) $n \times p$ (C) $m \times n$ (D) $p \times n$

9. The roots of $x^2 - 7x + 10 = 0$ are:

- (A) $-2, -5$ (B) $2, 5$ (C) $-2, 5$ (D) $2, -5$

10. If α, β are the roots of $3x^2 - 2x + 4 = 0$, then sum of roots is:

- (A) $\frac{2}{3}$ (B) $-\frac{2}{3}$ (C) $\frac{4}{3}$ (D) $-\frac{4}{3}$

11. Partial fractions of $\frac{1}{(x-1)(x+1)}$ are:

- (A) $\frac{A}{x-1} + \frac{B}{x+1}$ (B) $\frac{Ax+B}{x-1} + \frac{C}{x+1}$ (C) $\frac{A}{x-1} + \frac{Bx+C}{x+1}$ (D) $\frac{Ax+B}{x^2-1}$

12. Next two terms of sequence 7, 9, 12, 16, ... are:

- (A) 18, 20 (B) 19, 21 (C) 20, 22 (D) 21, 27

13. If $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in G.P then common ratio is:

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

14. $n_{p_2} = 30$, then n is:

- (A) 6 (B) 5 (C) 4 (D) 3

15. In how many ways can 4-keys be arranged on a circular key ring:

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

16. $n! > n^2$ is true for $n =$

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

17. The formula for $(r+1)$ th term of binomial expansion of $(a+x)^n$ is:

- (A) $\binom{n}{r} a^{n-r} x^r$ (B) $\binom{n}{r} a^{n+r} x^r$ (C) $\binom{n}{r} a^n x^{n-r}$ (D) $\binom{n}{r} a^n x^{n+r}$

18. Which one is the quadrantal angle:

- (A) 30° (B) 45° (C) 60° (D) 90°

19. $\cos 2\alpha =$

- (A) $1 - 2\cos^2 \alpha$ (B) $2\cos^2 \alpha - 1$ (C) $\sin \alpha \cos \alpha$ (D) $2\sin \alpha \cos \alpha$

20. Period of $\operatorname{Cosec} \frac{x}{4}$ is:

- (A) 2π (B) 4π (C) 6π (D) 8π