

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 The sum of infinite geometric series with common ratio $|r| < 1$ is:

- (A) $\frac{a}{1-r}$ (B) $\frac{a}{1+r}$ (C) $\frac{a}{1-r^2}$ (D) $\frac{a}{1+r^2}$

2. A die is rolled. The probability that the dot on the top is greater than 4 is:

- (A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{2}{3}$

3. The value of ${}^{12}C_{10}$ =

- (A) 11 (B) 66 (C) 22 (D) 2

4. The sum of exponents of a and b in every term in the expansion of $(a+b)^n$ is:

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

5. The inequality $n! > 2^n - 1$ is valid if n is:

- (A) $n=3$ (B) $n \leq 3$ (C) $n > 3$ (D) $n \geq 3$

6. $\frac{2\pi}{3}$ radians =

- (A) 120° (B) 60° (C) 90° (D) 30°

7. $\sin(2\pi - \theta)$ =

- (A) $\sin\theta$ (B) $-\sin\theta$ (C) $\cos\theta$ (D) $-\cos\theta$

8. The period of $\sin 2x$ =

- (A) 2π (B) $-\pi$ (C) π (D) $-\pi$

9. $\sqrt{\frac{s(s-a)}{bc}}$ =

- (A) $\sin \frac{\alpha}{2}$ (B) $\sin \frac{\beta}{2}$ (C) $\cos \frac{\alpha}{2}$ (D) $\cos \frac{\beta}{2}$

10. Hero's formula for area of triangle is:

- (A) $\sqrt{s(s-a)(s-b)(s-c)}$ (B) $\frac{1}{2} bc \sin \alpha$ (C) $\frac{C^2 \sin \alpha \sin \beta}{2 \sin r}$ (D) $\frac{1}{2} ab \sin r$

11. $\sin^{-1}\left(-\frac{1}{2}\right)$ =

- (A) $\frac{\pi}{3}$ (B) $-\frac{\pi}{3}$ (C) $\frac{\pi}{6}$ (D) $-\frac{\pi}{6}$

12. If $\sin x = \cos x$ then x =

- (A) 0° (B) 30° (C) 45° (D) 60°

13. The equation $x^2 + 1 = 0$ has solution in:

- (A) \mathbb{R} (B) \mathbb{C} (C) \mathbb{Q} (D) \mathbb{Q}

14. Let $p \rightarrow q$ be a given conditional then $\sim q \rightarrow \sim p$ is:

- (A) Converse (B) Inverse (C) Contra positive (D) Positive

15. If A and B are non singular matrices, then $(AB)^{-1}$ is equal to.

- (A) $\frac{1}{AB}$ (B) $A^{-1}B^{-1}$ (C) BA (D) $B^{-1}A^{-1}$

16. $AX = 0$ is homogeneous system with $|A| \neq 0$ then system has:

- (A) No solution (B) Trivial solution (C) Non-trivial solution (D) Infinite solution

17. If $4^{-x} = \frac{1}{2}$ then x =:

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

18. An equation which remains unchanged when x is replaced by $\frac{1}{x}$ is:

- (A) Exponential (B) Reciprocal (C) Radical (D) Reducible

19. Partial fractions of $\frac{1}{x^2-1}$ will be of the form:

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

20. General term of the sequence 1,3,5 ... is:

- (A) $2n+2$ (B) $2n$ (C) $2n-1$ (D) $3n$