

**Mathematics(Objective)****Group-II****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 A complex number  $1 + i$  can also be expressed as:  
 (A)  $2(\cos 45^\circ + i \sin 45^\circ)$  (B)  $\sqrt{2}(\cos 45^\circ - i \sin 45^\circ)$  (C)  $\sqrt{2}(\cos 45^\circ + i \sin 45^\circ)$  (D)  $2(\cos 45^\circ - i \sin 45^\circ)$
2. If  $Z$  is a complex number and  $Z = \bar{Z}$  then  $Z$  must be:  
 (A) Real (B) Imaginary (C) Rational (D) Irrational
3. The set  $\{(a, b)\}$  is called:  
 (A) Infinite set (B) Singleton set (C) Empty set (D) Set with two elements
4. Drawing conclusion from premises believed to be true is called:  
 (A) Proposition (B) Contradiction (C) Induction (D) Deduction
5. If  $p$  is a logical statement  $p \wedge \sim p$  is always:  
 (A) Absurdity (B) Contingency (C) Tautology (D) Conditional
6. If  $A = [a \ b \ c]$ , then order of  $A^t$  is:  
 (A)  $1 \times 3$  (B)  $3 \times 1$  (C)  $3 \times 3$  (D)  $1 \times 1$
7. If the matrix  $\begin{bmatrix} \lambda & 1 \\ -2 & 1 \end{bmatrix}$  is singular then  $\lambda =$   
 (A) 2 (B) 1 (C) -1 (D) -2
8. If  $4^{3x} = \frac{1}{2}$  then  $x$  is equal to:  
 (A)  $-\frac{1}{6}$  (B) -6 (C)  $\frac{1}{6}$  (D) 6
9. If  $\omega$  is cube root of unity, then  $\omega + \omega^2 =$   
 (A) 0 (B) -1 (C) 1 (D)  $\frac{1}{\omega}$
10. From the identity  $5x + 4 = A(x - 1) + B(x + 2)$ , value of  $B$  is:  
 (A) -3 (B) 3 (C) -2 (D) 2
11. Which of the term cannot be a term of G.P.:  
 (A) -1 (B) 1 (C) 0 (D) 5
12.  $\sum_{k=1}^n K$  is equal to:  
 (A)  $\frac{n+1}{2}$  (B)  $\frac{n(n+1)}{2}$  (C)  $\frac{n(n+1)(2n+1)}{6}$  (D)  $\frac{n(n-1)}{2}$
13.  $\frac{nPr}{r!}$  is equal to:  
 (A)  ${}^n C_r$  (B)  ${}^n C_{r-1}$  (C)  ${}^{n+1} C_r$  (D)  ${}^{n-1} C_r$
14. In expansion of  $(a + b)^{16}$  middle term will be:  
 (A) 11th (B) 12th (C) 8th (D) 9th
15. Which of the following is NOT Quadrantal angle?  
 (A)  $\frac{9}{2}\pi$  (B)  $13\pi$  (C)  $\frac{4}{3}\pi$  (D)  $\frac{\pi}{2}$
16. The angle  $\frac{3\pi}{2} - \theta$  lies in quadrant:  
 (A) I (B) II (C) III (D) IV
17. The range of  $\sin x$  is:  
 (A)  $[-1, 1]$  (B)  $[-1, 0]$  (C)  $[0, 2]$  (D)  $[-2, 2]$
18. The radius of inscribed circle is:  
 (A)  $\frac{abc}{4\Delta}$  (B)  $\frac{S}{\Delta}$  (C)  $\frac{\Delta}{S - a}$  (D)  $\frac{\Delta}{S}$
19.  $\cos \left( \sin^{-1} \frac{1}{\sqrt{2}} \right)$  is equal to:  
 (A)  $\frac{1}{2}$  (B)  $\frac{\pi}{4}$  (C)  $\frac{1}{\sqrt{2}}$  (D)  $-\frac{\pi}{4}$
20. If  $\sin x = \frac{1}{2}$ , then reference angle is:  
 (A)  $\frac{\pi}{3}$  (B)  $\frac{\pi}{4}$  (C)  $-\frac{\pi}{6}$  (D)  $\frac{\pi}{6}$