# Inter (Part-I) 2021

| Mathematics | Group-I | PAPER: I |
|---|---|---|
| Time: 30 Minutes | (OBJECTIVE TYPE) | Marks: 20 |

**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-** The number of roots of polynomial equation $8x^6 - 19x^3 - 27 = 0$ are:

(a) 2         (b) 4

(c) 6 ✓       (d) 8

**2-** For an infinite geometric series of which $|r| < 1$, we have $S_\infty =$ :

(a) $\dfrac{a(1+r)}{1-r}$       (b) $\dfrac{a}{1+r}$

(c) $\dfrac{a}{2r}$            (d) $\dfrac{a}{1-r}$ ✓

**3-** The property used in $(a+1) + \dfrac{3}{4} = a + \left(1 + \dfrac{3}{4}\right)$ is:

(a) Closure        (b) Associative ✓

(c) Commutative    (d) Additive

**4-** If $a_{n-3} = 2n - 5$, then $7^{th}$ term is = :

(a) 9         (b) 15 ✓

(c) 11       (d) 13

**5-** The converse of $p \to q$ is:

(a) $\sim p \to q$       (b) $p \to \sim q$

(c) $q \to p$ ✓     (d) $\sim p \to \sim q$

**6-** Partial fraction of $\dfrac{1}{x^2 - 1}$ will be of the form:

(a) $\dfrac{Ax+B}{x^2-1}$      (b) $\dfrac{A}{x+1} + \dfrac{B}{x-1}$ ✓

(c) $\dfrac{A}{x+1}$         (d) $\dfrac{B}{x-1}$

**7-** When $p(x) = x^3 + 4x^2 - 2x + 5$ is divided by $(x - 1)$, then remainder is:

(a) 10

(b) −10

(c) 8 ✓

(d) −8

**8-** If $\begin{vmatrix} k & 4 \\ 4 & k \end{vmatrix} = 0$, then value of k is:

(a) ± 16

(b) 0

(c) ± 4 ✓

(d) ± 8

**9-** If H is H.M. between a and b, then H = :

(a) $\dfrac{2ab}{a + b}$ ✓

(b) $\dfrac{a + b}{2ab}$

(c) $\dfrac{a + b}{2}$

(d) $\pm\sqrt{ab}$

**10-** The trivial solution of the homogeneous linear equation in three variables is:

(a) (0, 0, 0) ✓

(b) (1, 0, 0)

(c) (0, 1, 0)

(d) (0, 0, 1)

**11-** The period of $3 \cos\left(\dfrac{x}{5}\right)$ is:

(a) $\pi$

(b) $10\pi$ ✓

(c) $\dfrac{\pi}{10}$

(d) $\dfrac{\pi}{5}$

**12-** The factorial of a positive integer 'n' is:

(a) $n! = n(n - 1)!(n - 2)!$

(b) $n! = n(n + 2)!$

(c) $n! = n(n - 1)!$ ✓

(d) $n! = n(n - 2)!$

**13-** The solution of $1 + \cos x = 0$ if $0 \le x \le 2\pi$ is equal to:

(a) {0}

(b) $\left\{\dfrac{\pi}{2}\right\}$

(c) $\left\{\dfrac{\pi}{3}\right\}$

(d) $\{\pi\}$ ✓

**14-** $\cos 48° + \cos 12° = :$

(a) $2 \cos 30° \cos 18°$ ✓

(b) $3 \cos 18°$

(c) $\sqrt{3} \cos 18°$

(d) $\sqrt{2} \cos 18°$

**15-** $\sec\left[\cos^{-1}\left(\dfrac{1}{2}\right)\right] = :$

(a) $\dfrac{1}{2}$       (b) 2 ✓

(c) $\dfrac{\pi}{3}$       (d) $\dfrac{\pi}{6}$

16- The middle term in expansion of $(a + x)^n$ when n is even:

(a) $\left(\dfrac{n}{2} + 1\right)$th term ✓    (b) $\left(\dfrac{n}{2} - 1\right)$th term

(c) $\left(\dfrac{n}{2}\right)$th term       (d) $\left(\dfrac{n + 1}{2}\right)$th term

17- $\dfrac{9\pi}{5}$ rad in degree measure is:

(a) 321°       (b) 322°

(c) 323°       (d) 324° ✓

18- If $\Delta$ is the area of a triangle ABC, then $\Delta$ = :

(a) $\dfrac{1}{2}$ bc sin β       (b) $\dfrac{1}{2}$ ab sin α

(c) $\dfrac{1}{2}$ bc sin α ✓       (d) ab sin α

19- In anti-clockwise direction, $\dfrac{1}{4}$ rotation is equal to:

(a) 90° ✓       (b) 180°

(c) 270°       (d) 45°

20- With usual notations, the value of a + b + c is:

(a) s       (b) 2s ✓

(c) 3s       (d) $\dfrac{s}{2}$