Inter (Part-II) 2021

Mathematics	(Group-II)	PAPER: II
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- $x = at^2$ and $y = 2at$ are parametric equations of:

(a) Parabola ✓ (b) Ellipse

(c) Circle (d) Hyperbola

2- If θ is measured in radian, then $\lim_{\theta \to 0} \frac{\sin 7\theta}{\theta} =$:

(a) 7 ✓ (b) $\frac{1}{7}$

(c) $\frac{7\pi}{22}$ (d) $\frac{7\pi}{12}$

3- The derivative of $\frac{1}{1+x}$ is:

(a) x (b) $1 + x$

(c) $(1 + x)^{-2}$ (d) $-1(1 + x)^{-2}$ ✓

4- The derivative of $ln(\tan h\, x)$ is:

(a) $\frac{1}{\tan h\, x}$ (b) $\frac{\sec h^2 x}{\tan h\, x}$ ✓

(c) $\sec h^2 x$ (d) $\sec hx$

5- If $y = \cot^{-1} x$, then $\frac{dy}{dx} =$:

(a) $\frac{1}{1 - x^2}$ (b) $\frac{-1}{1 + x^2}$ ✓

(c) $\frac{1}{x^2 - 1}$ (d) $\frac{1}{x^2 + 1}$

6- If $y^2 + x^2 = a^2$, then $\frac{dy}{dx} =$:

(a) $-\frac{x}{y}$ ✓ (b) $-\frac{y}{x}$

(c) $\frac{x}{y}$ (d) $\frac{y}{x}$

7- $\int \cos x \, dx =$:

(a) $1 - \sin^2 x$ (b) $\sqrt{1 - \sin^2 x}$

(c) $\sin x$ ✓ (d) $-\sin x$

8- $\int_1^2 (x^2 + 1) \, dx =$:

(a) $\frac{10}{3}$ ✓ (b) $\frac{3}{10}$

(c) π (d) $\frac{\pi}{2}$

9- The order of $\frac{dy}{dx} = \frac{4}{3} x^3 + x - 3$ is:

(a) 1 ✓ (b) $\frac{3}{4}$

(c) $\frac{4}{3}$ (d) -3

10- $\int_a^x 3x^2 \, dx =$:

(a) $x^3 + a^3$ (b) $x^3 - a^3$ ✓

(c) $3x^3$ (d) x^3

11- The equation of a straight line represented by $x \cos \alpha + y \sin \alpha = P$ is called:

(a) Normal form ✓ (b) Angular form

(c) Symmetric form (d) P-form

12- The measure of the angle between the lines $ax^2 + 2hxy + by^2 = 0$ is given by $\tan \theta =$:

(a) $\frac{\sqrt{h^2 - ab}}{a - b}$ (b) $\frac{2\sqrt{h^2 - ab}}{a + b}$ ✓

(c) $\frac{h^2 - ab}{a + b}$ (d) ∞

13- The points A(–5, –2), B(5, –4) are ends point of a diameter of the circle. The centre will be:

(a) (0, 3) (b) (0, –3) ✓

(c) (5, 2) (d) (–5, 4)

14- The feasible solution which maximize or minimize the objective function is called:

(a) Boundary (b) Half plane

(c) Optimal solution ✓ (d) Initial values

15- An angle inscribed in a semi-circle is:

(a) 0 (b) $\frac{\pi}{2}$ ✓

(c) π (d) 2π

16- xy = 0 represents:

(a) A pair of lines ✓ (b) Hyperbola

(c) Parabola (d) Ellipse

17- The value of c for $\frac{y^2}{16} - \frac{x^2}{49} = 1$ is:

(a) 16 (b) 49

(c) 65 (d) $\sqrt{65}$ ✓

18- If $\vec{a} = \hat{i} - \hat{j}$ and $\vec{b} = \hat{j} + \hat{k}$, then $\vec{a} \cdot \vec{b}$ = :

(a) 0 ✓ (b) 1

(c) –1 (d) $\sqrt{2}$

19- The projection of $\vec{v}$ along $\vec{u}$ is:

(a) $\frac{\vec{u} \cdot \vec{v}}{|u|}$ ✓ (b) $\frac{\vec{u} \cdot \vec{v}}{|v|}$

(c) $\frac{\vec{u} \cdot \vec{v}}{|u|\,|v|}$ (d) $\frac{\vec{u} \cdot \vec{v}}{|u| + |v|}$

20- The unit vector in the direction of $\vec{v} = [3, -4]$:

(a) 5[3, –4] (b) $\frac{1}{5}[3, -4]$ ✓

(c) $\hat{i}$ (d) $\hat{j}$