Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2017 – 2019 to 2019 – 2021)

MATHEMATICS 221-(INTER PART – II) Time Allowed : 30 Minutes

Q.PAPER – II (Objective Type) GROUP – II Maximum Marks : 20

PAPER CODE = 8198

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 derivative of $\frac{1}{1+x}$ is :			
	(A) x	(B) $1+x$	(C) $(1+x)^{-2}$	(D) $-1(1+x)^{-2}$
2	$\int \cos x\, dx =$:			
	(A) $1-\sin^2 x$	(B) $\sqrt{1-\sin^2 x}$	(C) $\sin x$	(D) $-\sin x$
3	$\int_1^2 (x^2+1)\, dx =$:			
	(A) $\frac{10}{3}$	(B) $\frac{3}{10}$	(C) π	(D) $\frac{\pi}{2}$
4	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) $\frac{1}{x^2+1}$
5	The derivative of $\ell n(\tanh x)$ is :			
	(A) $\frac{1}{\tanh x}$	(B) $\frac{\sec h^2 x}{\tanh x}$	(C) $\sec h^2 x$	(D) $\sec hx$
6	$x=at^2$ and $y=2at$ are parametric equations of :			
	(A) Parabola	(B) Ellipse	(C) Circle	(D) Hyperbola
7	If $y^2+x^2=a^2$, then $\frac{dy}{dx} =$:			
	(A) $-\frac{x}{y}$	(B) $-\frac{y}{x}$	(C) $\frac{x}{y}$	(D) $\frac{y}{x}$
8	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
9	$\int_a^x 3x^2 dx =$:			
	(A) x^3+a^3	(B) x^3-a^3	(C) $3x^3$	(D) x^3

1-10	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) $\frac{7\pi}{12}$
11	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) ∞
12	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) $\sqrt{2}$
13	The feasible solution which maximize or minimize the objective function is called : (A) Boundary (B) Half plane (C) Optimal solution (D) Initial values
14	The value of c for $\frac{y^2}{16} - \frac{x^2}{49} = 1$ is : (A) 16 (B) 49 (C) 65 (D) $\sqrt{65}$
15	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
16	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) $\hat{j}$
17	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)
18	$xy = 0$ represents : (A) A pair of lines (B) Hyperbola (C) Parabola (D) Ellipse
19	The projection of $\vec{v}$ along $\vec{u}$ is : (A) $\frac{\vec{u} \cdot \vec{v}}{\lvert u \rvert}$ (B) $\frac{\vec{u} \cdot \vec{v}}{\lvert v \rvert}$ (C) $\frac{\vec{u} \cdot \vec{v}}{\lvert u \rvert \lvert v \rvert}$ (D) $\frac{\vec{u} \cdot \vec{v}}{\lvert u \rvert + \lvert v \rvert}$
20	An angle inscribed in a semi-circle is : (A) 0 (B) $\frac{\pi}{2}$ (C) π (D) 2π