

SAL 11.05.2019

Roll No. _____ Annual 2019

Mathematics
Paper : II

INTER PART II CLASS 12th - (II)

Time : 30 Minutes
Marks : 20

OBJECTIVE
Code : 8193

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number with marker or pen. Cutting or filling two or more circles will result in zero mark in that question.

1. $2\hat{i} \times 2\hat{j} =$
(A) $4\hat{i}$ (B) 4 (C) $4\hat{k}$ (D) 0
2. Two vectors $\underline{u}$ and $\underline{v}$ are perpendicular if
(A) $\underline{u} \cdot \underline{v} = 0$ (B) $\underline{u} \times \underline{v} = 0$ (C) $\underline{u} = t\underline{v}$ (D) $\underline{u} + \underline{v} = 0$
3. Eccentricity e of circle is
(A) $e < 1$ (B) $e = 1$ (C) $e > 1$ (D) $e = 0$
4. Axis of parabola $y^2 = 4ax$ is
(A) $y = 0$ (B) $x = 0$ (C) $y = a$ (D) $x = a$
5. Radius of circle $x^2 + y^2 + 2gx + 2fy - c = 0$ is
(A) $\sqrt{g^2 + f^2 - c}$ (B) $\sqrt{g^2 + f^2 + c}$ (C) $\sqrt{g^2 + f^2 - c^2}$ (D) $\sqrt{g^2 + f^2 + c^2}$
6. $(1, 1)$ is solution of
(A) $x + y < 1$ (B) $2x + y < 1$ (C) $2x - y < 1$ (D) $x - y < 1$
7. Equation of vertical line is
(A) $y = c$ (B) $y = -c$ (C) $x = c$ (D) $y = x$
8. Distance of A $(1, 1)$ from origin is
(A) 2 (B) $\sqrt{2}$ (C) 0 (D) 1
9. Slope of line AB, A(1,2), B(1,4)
(A) 0 (B) 1 (C) 2 (D) undefined
10. Slope - intercept form of line is
(A) $y - y_1 = m(x - x_1)$ (B) $\frac{x}{a} + \frac{y}{b} = 1$ (C) $y = mx + c$ (D) $x \cos \alpha + y \sin \alpha = p$
11. $\int 3 \sin 3x dx =$
(A) $\cos 3x$ (B) $-\cos 3x$ (C) $a \sin 3x$ (D) $9 \cos 3x$
12. If $\int_{-1}^5 f(x) dx = 5$, then $\int_5^{-1} f(x) dx =$
(A) $\frac{1}{5}$ (B) $-\frac{1}{5}$ (C) -5 (D) 5

(Turn Over)

Roll No. _____ Annual 2019

Mathematics

(INTER PART II CLASS 12th)

Time : 2 : 30 Hours

Paper : II

SUBJECTIVE

Marks : 80

Note :- Section I is compulsory. Attempt any three Questions from section II.

Section = I

2. Write short answers to any Eight parts. (8 x 2 = 16)

- i. Express the perimeter p of a square as a function of its area A .
- ii. For the function $f(x) = -2x + 8$, find $f^{-1}(x)$.
- iii. Evaluate $\lim_{x \rightarrow 3} \frac{x-3}{\sqrt{x}-\sqrt{3}}$.
- iv. Differentiate $\frac{2x-3}{2x+1}$ w.r.t x .
- v. Differentiate $\sin^2 x$ w.r.t $\cos^4 x$.
- vi. Differentiate $(\ln x)^x$ w.r.t x .
- vii. Find $f'(x)$ if $f(x) = \frac{e^x}{e^{-x}+1}$.

viii. Find $\frac{dy}{dx}$ if $y = x^2 \ln \sqrt{x}$

ix. Find y_2 if $y = \ln \left(\frac{2x+3}{3x+2} \right)$

x. Find $\frac{dy}{dx}$ if $y = \ln \sqrt{\frac{x^2-1}{x^2+1}}$

xi. Find $\frac{dy}{dx}$ if $y = \cosh^{-1}(\sec x)$ $0 \leq x \leq \pi/2$

xii. Find $f'(x)$ if $f(x) = \sqrt{\ln(e^{2x} + e^{-2x})}$

3. Write short answers to any Eight parts.

(8 x 2 = 16)

i. Evaluate $\int \frac{\sqrt{y}(y+1)}{y} dy$

ii. Evaluate $\int \frac{e^x}{e^x+3} dx$

iii. Evaluate $\int x \ln x dx$

iv. Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \cos t dt$

v. Give the definition of differential equation and write an example.

vi. Evaluate $\int (a-2x)^{\frac{2}{3}} dx$

vii. Evaluate $\int e^x \left(\frac{1}{x} + \ln x \right) dx$

viii. Find area bounded by $y = x^2 + 1$ and x -axis, from $x = 1$ to $x = 2$

ix. Write any two properties of definite integrals.

x. Solve the differential equation $\frac{dy}{dx} = -y$

xi. Define objective function.

xii. Show that the ordered pair $(1, 1)$ is a solution of the inequality $x + 2y < 6$.

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