Mathematics | A | L.R.No - 919 | Paper Code No. 8191

Paper II (Objective Type) | Inter - A- 2018

Time Allowed : 30 Minutes | Inter (Part - II)

Maximum Marks : 20 | Session (2014 - 16) to (2016 - 18)

BHW

Note : Four possible choices A , B , C D to each question are given. Which choice is correct , fill that circle in front of that question number.Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Q. (1) (1)	If $x = at^2$ and $y = 2at$ are equations of a Curve then " t " is called : (A) Variable (B) Constant (C) Parameter (D) Coefficient
(2)	$x = a\,Cos\,t$ and $y = a\,Sin\,t$ are the Parametric Equations of a : (A) Circle (B) Parabola (C) Ellipse (D) Line
(3)	$\frac{d}{dx}(-Cot x)$ = (A) Sec^2x (B) $Cosec^2x$ (C) $-Cosec^2x$ (D) $-Sec^2x$
(4)	If $y = e^{ax}$, then y_4 is : (A) a^4e^{ax} (B) $\frac{2e^{ax}}{a}$ (C) $3e^{ax}$ (D) xe^{ax}
(5)	$\frac{d}{dx}(\sqrt{Tanx})$ = (A) $\sqrt{Sec^2x}$ (B) $\frac{1}{2\sqrt{Tanx}}Sec^2x$ (C) $\frac{1}{2\sqrt{Tanx}}$ (D) $\frac{1}{2}(Sec^2x)^{-\frac{1}{2}}$
(6)	Both Relative Maximum and Relative Minimum are called in General : (A) Greatest Value (B) Least Value (C) Relative Extrema (D) Maxima
(7)	If two lines are Perpendicular , then : (A) $\frac{m_1}{m_2} = -1$ (B) $\frac{m_1}{m_2} = 1$ (C) $m_1m_2 = -1$ (D) $m_1m_2 = 1$
(8)	Slope of Line $ax - by + c = 0$ is : (A) $\frac{a}{b}$ (B) $\frac{b}{a}$ (C) $\frac{-a}{b}$ (D) $\frac{-b}{a}$
(9)	The Coordinates of a point $P(x, y)$ translated through the point $Q'(h, k)$ then the coordinate of P referred to new axes are : (A) $(x - h, y - k)$ (B) $(x + h, y + k)$ (C) $(x - k, y - h)$ (D) $(x + k, y + h)$
(10)	x intercept and y intercept for the line $2x - y + 4 = 0$ are : (A) $(2, -4)$ (B) $(-2, -4)$ (C) $(-2, 4)$ (D) $(2, 4)$
(11)	A function which is to be maximized or minimized is called : (A) Subjective Function (B) Objective Function (C) Qualitative Function (D) Quantitative Function
(12)	The Centre of the Circle $x^2 + y^2 = r^2$ is : (A) $(1, 1)$ (B) $(2, 0)$ (C) $(0, 0)$ (D) $(0, 2)$
(13)	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is the standard equation of : (A) Ellipse (B) Circle (C) Parabola (D) Hyperbola
(14)	The length of the Latusrectum of Parabola $y^2 = 4ax$ is : (A) $2a$ (B) $4a$ (C) $4ax$ (D) $\frac{y}{2a}$
(15)	$\int_0^{\frac{\pi}{4}} \frac{Sec^2x}{1 + tanx}\,dx$ (A) 1 (B) 2 (C) $\ln 2$ (D) $\ln\sqrt{2}$
(16)	The Solution of the differential equation $\frac{dy}{dx} = -y$ is : (A) $y = xe^{-x}$ (B) $y = ce^{-x}$ (C) $y = e^x$ (D) $y = ce^x$
(17)	$\int \sqrt{2x + 3}\,2\,dx$ = (A) $\frac{2}{3}(2x + 3)^{\frac{3}{2}} + c$ (B) $\frac{3}{2}(2x + 3)^{\frac{3}{2}}$ (C) $-\frac{2}{3}(2x + 3)^{\frac{3}{2}}$ (D) $-\frac{3}{2}(2x + 3)^{\frac{3}{2}}$
(18)	$\int \frac{1}{x}\,dx$ = (A) $\frac{1}{x^2}$ (B) $\frac{-1}{x^2}$ (C) $\frac{1}{x}$ (D) $\ln x + c$
(19)	A Unit Vector perpendicular to both $\underline{u}$ and $\underline{v}$ is given by : (A) $\underline{u} \times \underline{v}$ (B) $\underline{u} - \underline{v}$ (C) $\frac{\underline{u} \times \underline{v}}{\lvert \underline{u} \times \underline{v} \rvert}$ (D) $\lvert \underline{u} \times \underline{v} \rvert$
(20)	Area of the Triangle with $\underline{u}$ and $\underline{v}$ its side is : (A) $\underline{u} \times \underline{v}$ (B) $\frac{1}{2}\lvert \underline{u} \times \underline{v} \rvert$ (C) $\underline{u} \cdot \underline{v}$ (D) $\underline{uv}$

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Roll No. BHW 919 - 20000		
Mathematics (Subjective)	Inter-A-2018	Inter Part - II
Time : 2 : 30 Hours	Session (2014 - 16) to (2016 -18)	Total Marks : 80

Note : It is compulsory to attempt (8 -- 8) parts each from Q.No.2 and 3 while attempt any 9 parts from Q. No.4 Attempt any (03) questions from Part II. Write same Question No. and its Part No. as given in the question paper.

Part - I

25 x 2 = 50

Q.No.2 (i) Define Linear Function. (ii) $f(x) = x^2$ differentiate by First Principle.

(iii) Find Derivative of $y = (x^2 + 5)(x^3 + 7)$ (iv) Differentiate Sin x with respect to Cot x

(v) Find Extreme Values of $f(x) = x^2 - x - 2$ (vi) Expand a^x in Maclaurin Series.

(vii) Differentiate $(\ln x)^x$ w.r.t. x. (viii) Find y_2 if $y = \sqrt{x} + \frac{1}{\sqrt{x}}$

(ix) Evaluate the limit $\lim_{\theta \to 0} \frac{1 - \cos\theta}{\sin^2\theta}$ (x) If $x = 1 - t^2$, $y = 3t^2 - 2t^3$ find $\frac{dy}{dx}$

(xi) Find $\frac{dy}{dx}$ if $y = \ln(x + \sqrt{x^2 + 1})$

(xii) Without finding $f^{-1}(x)$ state Domain and Range of $f^{-1}(x)$ if $f(x) = \sqrt{x + 2}$

Q.No.3 (i) Define the Convex Region. (ii) Use differential to approximate the value of $\sqrt{17}$

(iii) Graph the solution set of $2x + 1 \geq 0$ (iv) Solve the differential equation $xdy + y(x-1)dx = 0$

(v) Evaluate $\int x e^x dx$ (vi) Evaluate $\int x \tan^{-1} x \, dx$

(vii) Evaluate $\int_0^3 \frac{dx}{x^2 + 9}$ (viii) Evaluate $\int \frac{\cos 2x - 1}{1 + \cos 2x} dx$

(ix) Evaluate $\int \frac{1}{x \ln x} dx$ (x) Evaluate $\int \frac{x + 2}{\sqrt{x + 3}} dx$

(xi) Evaluate $\int \frac{(1 - \sqrt{x})^2}{\sqrt{x}} dx$ (xii) Evaluate $\int \frac{e^{m \tan^{-1} x}}{1 + x^2} dx$

Q.No.4 (i) Find the Coordinates of the point that divides the join of A(-6,3), B(5,-2) in the ratio 2 : 3

(ii) Find the Area of Triangle with vertices A(1,4), B(2,-3) and C(3,-10)

(iii) Check whether the given point (-7,6) lies above or below the given line $4x + 3y - 9 = 0$

(iv) Determine the value of "P" such that the lines $2x - 3y - 1 = 0$, $3x - y - 5 = 0$ and $3x + py + 8 = 0$ meet at a point.

(v) Find Foci of Ellipse whose equation is $x^2 + 4y^2 = 16$

(vi) Find "α" so that $|\alpha \underline{i} + (\alpha + 1)\underline{j} + 2\underline{k}| = 3$

(vii) If $\underline{v}$ is a vector for which $\underline{v} \cdot \underline{i} = 0$, $\underline{v} \cdot \underline{j} = 0$, $\underline{v} \cdot \underline{k} = 0$ find $\underline{v}$

(viii) Prove that $\underline{a} \times (\underline{b} + \underline{c}) + \underline{b} \times (\underline{c} + \underline{a}) + \underline{c} \times (\underline{a} + \underline{b}) = 0$

(ix) A force $\vec{F} = 7\underline{i} + 4\underline{j} - 3\underline{k}$ is applied at P(1, -2, 3). Find its Moment about the point Q(2,1,1)

(x) Define Rotation of Axes.

(xi) Define Vertex of Parabola.

(xii) Find Focus of Parabola $y^2 = -12x$.

(xiii) Define Latusrectum of Ellipse.

P.T.O.