MATHEMATICS Marks: 20 SECTION = A (Marks: 20)
Each part carries one mark. (i) if u 3i - 2k. v 2j + kand w 1 + lik then u x y w ? A 25
We
(ii) What is domain of f f, when f(x) 2 + x 1 A Reaf numbers B 1x 1 A Reaf
C 12 - 4 D 1.11 (iii) For parametric equations x and x $2at$ represent the equations x and x $2at$ represent the equation x and x $2at$ represent the equation x and x $2at$ represent the equation x and x $2at$ represent x $2at$ represent x $2at$ represent x $2at$ represent x $2at$ representation x representation x $2at$ representation x at repr
A $\frac{1}{x^2} + \frac{1}{y^2} = 1$ B $\frac{x^2 + y^2 - 1}{x^2} = \frac{1}{y^2}$ [(iv) $\lim_{x \to \infty} \frac{1}{x^2} + \frac{1}{y^2} = 1$ B $\frac{x^2 + y^2 - 1}{x^2} = \frac{1}{y^2}$ [(v) Derivative of $\sin^2 x$ by $e^x \in \cos^2 x$ is: $\frac{1}{x^2} = \frac{1}{x^2} $
(iv) Imm ₁ · [1 + j] ² = 7 C
(v) Derivative of $\sin^4 x w r (\cos^2 x is)$: $= \frac{1}{2} \sin x \sec x = \frac{1}{2} \sin x$ $\frac{1}{2} \sin x \sec x = \frac{1}{2} \sin x$ (vi) $\frac{1}{2} a^4 = 7$ $\frac{1}{2} a^4 = 7$ $\frac{1}{2} a^4 = 7$ (vii) $\frac{1}{2} a^3 = 7$ (viii) Notation used for derivative of $\frac{1}{2} x \cos x = 7$ (viii) $\frac{1}{2} x \sin x = \frac{1}{2} \cos x \cos x = \frac{1}{2} \cos x \cos x = \frac{1}{2} \cos x $
(vi) Derivative of $sin^s + u \cdot r + cos^s + is$: $\frac{1}{2} + \frac{1}{2} \sin x + v \cdot v \cdot P + \frac{1}{2} + \frac{1}{2} \sin x$ $\frac{1}{2} + \frac{1}{2} \sin x + v \cdot v \cdot P + \frac{1}{2} + \frac{1}{2} \sin x$ (vi) $\frac{1}{2} - \frac{1}{2} - \frac{1}{2} \cos x + \frac{1}{2} \cos x +$
(vii) Notation used for derivative of $f(x)$ in the sequence of $f(x)$
(vii) Notation used for derivative of $x = f(x) / 5x$. For $x = f(x) / 5x$. For $x = f(x) / 5x$. (viii) If $y = (2x + 5) / 6$, then y_2 will be: A $\frac{1}{2} / 5x$. B $3(2x + 5) / 6$. (viii) If $y = (2x + 5) / 6$, then y_2 will be: A $\frac{1}{2} / 5x$. B $3(2x + 5) / 6$. (ix) $\int_{1}^{2} x / 6x /$
(viii) If $y = (2x + 5)i_1$, then y_2 will be: A $\frac{1}{2}x + 5$ B $3(2x + 5)i_2$ C $\frac{1}{3}x + 5$ D $6(2x + 5)i_2$ (ix) $\int_{A} x e^{i} dx = \frac{1}{2}$ A $x^{2} + e^{i} e^{i} = \frac{1}{2}$ A $x^{2} + e^{i} = \frac{1}{2}$ C $x^{2} - e^{i} = \frac{1}{2}$ A $x^{2} + e^{i} = \frac{1}{2}$ C $x^{2} - e^{i} = \frac{1}{2}$ (ix) $\int_{1}^{2} (x^{2} + 1) dx = \frac{1}{2}$ C $x^{2} - e^{i} = \frac{1}{2}$ C $x^{2} - e^{i} = \frac{1}{2}$ (ix) Solution of $y dx + v dy = 0$ is: A $x^{2} = \frac{1}{2}$ B $x^{2} = \frac{1}{2}$ A $x^{2} = \frac{1}{2}$ A $x^{2} = \frac{1}{2}$ A $x^{2} = \frac{1}{2}$ B $x^{2} = \frac{1}{2}$ A $x^{2} = \frac{1}{2}$ B $x^{2} = \frac{1}{2}$ C $x^{2} = \frac{1}{2}$ A $x^{2} = \frac{1}{2}$ B $x^{2} = \frac{1}{2}$ C $x^{2} = \frac{1}{2}$ A $x^{2} = \frac{1}{2}$ B $x^{2} = \frac{1}{2}$ C $x^{2} = \frac{1}{2}$
(viii) If $y = (2x + 5)^{\frac{1}{2}}$, then y_2 will be: A $\frac{1}{3}$ then y_2 will be: C $\frac{1}{3}$ then y_2 will be: (ix) $\int_{A} x e^{x} + c = B = 3((2x + 5)^{\frac{1}{2}})$ (ix) $\int_{A} x e^{x} + c = B = 3((2x + 5)^{\frac{1}{2}})$ C $x^2 + c^2 + c = D = xe^{x} + e^{x} + c$ (x) $\int_{A}^{1} (x^2 + 1) dx = 7$ A $\frac{1}{3} + x + c = B = \frac{10}{33}$ C $\frac{1}{3} + x + c = B = \frac{10}{33}$ (xi) Solution of $y dx + y dy = 0$ is: A $\frac{1}{3} + x + c = B = \frac{10}{33}$ (xii) Two lines f_1 and f_2 with respective slopes m_1 and m_2 are parallel if f_2 and f_3 with respective slopes m_1 and m_2 are parallel if f_3 and f_4 with respective slopes m_1 and m_2 are parallel if f_4 and f_4 with respective slopes f_4 and f_4 with respective f_4 and f_4 and f_4 with respective f_4 and
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
(ix) $ x e^x dx^{x+2} ^2$ A $x = e^x + e^x = B$ A $x^{x+2} = A$ A $x = e^x + e^x = B$ A $x^{x+2} = A$ A $x = e^x + e^x = B$ A $x^{x+2} = A$ (x) $\int_{-1}^{2} (x^2 + 1) dx = 2$ A $\frac{x^2}{3} + x + e^x = B$ (xi) Solution of $y dx + x dy = 0$ is: A $x = e^x = B$ A $x = e^x$
(x) ∫ ₁ ² (x² + 1)dx ? A = x³ + x + c B = 19/31 C = 10 D = 10/31 (xi) Solution of ydx + xdy = 10/31 (xii) Solution of ydx + xdy = 10/31 (xiii) Two lines t₁ and t₂ with respective slopes m₁ and m₂ are parallel if. A = xy = 1 B = xdy
(xi) Solution of yetx + vity = 0 is: (xi) Solution of yetx + vity = 0 is: (xi) Two lines t_1 and t_2 with respective slopes m_1 and m_2 are parallel if: A m_1 m_2 - 1 B m_1 m_2 - 1 (xii) The quation of the straight line whose slope is 2 and y-intercept is 5 is: A $\frac{x_1}{x_2} = m_1$ B $y = 5x + 2$ (xiii) The quation of the straight line whose slope is 2 and y-intercept is 5 is: A $\frac{x_2}{x_1} = m_2$ B $y = 5x + 2$ (xiv) If lines are parallel, then solution: A Does not exact B is indee (xv) An Excession D is indeed of the symbols of the straight of the symbols of the straight of the symbols of the second of the symbols of the symbol
(xi) Solution of $xdx + xdy = 0$ is: A $xy = 0$ B $y = 0$ A $y = 0$ B $y = 0$ A $y = 0$ B $y = 0$ (xii) Two lines t_1 and t_2 with respective slopes m_1 and m_2 are parallel if. A m_1 $m_2 = 1$ B m_1 $m_2 = 1$ (xiii) The causation of the straight line whose slope is 2 and y -intercept is 5 is: A $y = 0$ B $y = 0$ is $y = 0$ (xiv) If lines are parallel, then solution: A Does not exst B is finde (xv) An Expression involving any of the symbols A Does not exst B is finde (xv) An Expression involving any of the symbols (xvi) The equation of the circle $y = 0$
(xi) Two lines t_1 and t_2 with respective slopes m_1 and m_2 are parallel if. A m_1 m_2 - 1 B m_1 m_2 - 1 (xii) The causation of the straight line whose slope is 2 and y-intercept is 5 is: A t_2 t_3 t_4 t_5 t_4 t_5 t_7
(xii) The countries of the straight line whose slope is 2 and y-intercept is 5 is is 2 m. B. y = 5x + 2 (xiv) If lines are parallel, then solution: A
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(xv) If lines are parallel, then solution: A Doos not west B is indeed (xv) An Expression impolving and the symbols
(xi) An Expression involving any of the symbols and the symbols of scalled: A beginning of scalled: A beginning of the symbols of the symbo
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Cutting furtions it is called: A Tangent B Secant (xviii) The point of parabola which is closest to the focus is the vertex of the: A Cerele B Parabola C Ellipse D Hyperbola (xix) Unit vector in the same direction of vector $v = 13 - 44$: A 3(5) -4+(5) B 3 $I - 4I$; C $\frac{1}{2} - \frac{1}{3}$ D $\frac{1}{2} - \frac{1}{3}$ (xx) Attitudes of a triangle are always: Perfect Sources
Cutting furtions it is called: A Tangent B Secant (xviii) The point of parabola which is closest to the focus is the vertex of the: A Cerele B Parabola C Ellipse D Hyperbola (xix) Unit vector in the same direction of vector $v = 13 - 44$: A 3(5) -4+(5) B 3 $I - 4I$; C $\frac{1}{2} - \frac{1}{3}$ D $\frac{1}{2} - \frac{1}{3}$ (xx) Attitudes of a triangle are always: Perfect Sources
C Ellipse D Hyperbola (xix) Unit vector in the same direction of vector $v = 3 - 4 $; A 3(5), -4(5) B 3 $t - 4 $ C $\left[\frac{3}{5}, \frac{1}{5}\right]$ D $\left[\frac{1}{5}, \frac{1}{5}\right]$ (xx) Attitudes of a triangle are always: A Perfect sources
(xix) Unit vector in the same direction of vector r = [3 - 4]; A 3(5), -4(5) B 3f - 4) C [
vector $v = [3, -4]$: A 3(5), -4(5), B 3 $t = 4$] C $\begin{bmatrix} \frac{3}{5}, -\frac{1}{5} \end{bmatrix}$ D $\begin{bmatrix} \frac{3}{5}, \frac{1}{5} \end{bmatrix}$ (xx) Attitudes of a triangle are always: A Perfect squares
B l'arallei C Perpendicular
MATHEMATICS HSSC-II (2016) Time allowed 2:25 Hours Note: Altempt any ten parts from Section 19 section 19 five questions from Section 10 on the Section 19 five questions from Section 10 on the Section 2 on the Section 3 of the
Q.2 Attempt any TEN parts. All parts carry equal marks.
 (i) Evaluate lim 1 cos θ cos θ (ii) Graph the curve of the following parametric equations x - xec θ y
tan 0 where 0 is a parameter. (iii) Find $\frac{dy}{dx}$ if $x^2 - 4xy - 5y = 0$
(iv) If $y = \int \tan x + \int \tan x + \frac{1}{2} \tan x + \dots = \infty$
Prove that $(2y-1)\frac{dy}{dz} = \sec^2 x$ (v) Find $\frac{dz}{dz}$ if $y = x e^{\sin t}$
(vi) Evaluate $(x(\sqrt{x}+1)dx/(x>0))$
(vii) Evaluate $\int_{-2/2x}^{0} \frac{(x-1)^2}{12^2} dx$ (viii) Show that points A (3, 1), B (-2, -3) and C (2, 2) are vertices of an
isosceles triangle.
(ix) Find an equation of the line through (-4, -6) and perpendicular to a line having slope
(x) Find the equation of the circle whose
ends of diameter at (-3, 2) and (5, -6) (xi) Find an equation of the parabola whose focus is F(-3,4) and directrix is 3x -4x +5 = 0
whose focus is F(-3,4) and directrix is 3x -4y i 5 0 (xii) Find the point of intersection of the given conic 3x² -4y² and 3y² -2x - (xiii) Prove that the line segment joining the mid points of two sides of a triangle is parallel to the third side and the side and
(xiii) Prove that the line segment joining the mid points of two sides of a triangle is parallel to the third side and
half as long. (xiv) Find area of triangle determined by points P, Q and R P (0,0,0), Q (2,3,2, R (-1,1,4))
R (-1,1,4) <u>SECTION - C</u>
Q.3 If $f(x) = \frac{1}{(2x+5)^2}$
$\begin{cases} \frac{\sqrt{2x+5} - \sqrt{x+7}}{x-2} & x \neq 2 \end{cases}$
k, $x=2$
k, $x = 2$
Q.4 Show that $\frac{dy}{dx} = \frac{y}{x}$ if $\frac{y}{x} = tan^{-1}\frac{y}{y}$ Q.5 Solve the differential equation $(x^2 - yx^2)\frac{dy}{dx} + y^2 + yy^2 = 0$
Q.4 Show that $\frac{y_2}{x} = \frac{y}{x} = \frac{y}{x} + \frac{1}{x} \tan^{-\frac{1}{x}}$ Q.5 Solve the differential equation $(x^2 - yx^2)\frac{\theta}{\theta x} + y^2 + vy^2 = 0$ Q.6 Find the interior angles of the triangle whose vertices are $A(-2, 11)$, $B(-6, -3)$
Q.4 Show that $\frac{dy}{dt} = \frac{1}{t} \frac{y}{1} = t \tan \frac{1}{t}$. Q.5 Solve the differential equation $(x^2 - yx^2) \frac{y}{t} + y^2 + ty^2 = 0$. Q.6 Find the interior angles of the triangle whose vertices are A(-2, 11), B(-6, -3) C(4, -9)
Q.4 Show that $\frac{dy}{dt} = \frac{f}{t} \frac{1}{t} tan^{-\frac{1}{t}}$ Q.5 Solve the differential equation $(x^2 - yx^2)\frac{dt}{dt} + y^2 + ty^2 = 0$ Q.6 Find the interior angles of the triangle whose vertices are A(-2, 11), B(-6, -3) C(4, -9) Q.7 Maximize $f(x, y) = 2x + 5y$ subject to the constraints $x < 81 + y < 4 + 3 + 3 = 0$
Q.4 Show that $\frac{dy}{dt} = \frac{1}{t} \cdot \frac{1}{t} \cdot \frac{1}{t} \cdot \frac{1}{t} \cdot \frac{1}{t}$ Q.5 Solve the differential equation $(x^2 - yx^2) \frac{dy}{dt} + y^2 + ty^2 = 0$ Q.6 Find the interior angles of the triangle whose vertices are $A(-2, 11)$, $B(-6, -3)$ $C(4, -9)$ Q.7 Maximize $f_1x, y_1 - 2x + 5y$ subject to the constraints $-x + 8f_2 + y + 4f_3 + 3t = 0$ Q.8 Let $t = b$ $c = 0$ be a positive number and $0 < c < c$ and $b < 0$ compared to the $b < 0$ compared to $b < 0$ constraints $-x + 8f_2 + y + 2f_3 + 3t = 0$ Q.8 Let $b < 0$ $c < 0$ constraints $-x + 8f_2 + y + 2f_3 + 3t = 0$ Q.8 Let $b < 0$ constraints $-x + 8f_2 + y + 2f_3 + 3t = 0$ $b < 0$ constraints $-x + 8f_2 + y + 2f_3 + 3t = 0$ $b < 0$ constraints $-x + 8f_3 + 3t = 0$ constraints $-x + 8f_3 + 3t $
Q.4 Show that $\frac{dy}{dx} = \frac{7}{4} \cdot \frac{7}{4} $
Q.4 Show that $\frac{dy}{dx} = \frac{7}{4} \cdot \frac{7}{4} $