

Time: One Hour

Maximum: 35 Marks

Name:		Section A		Total Marks
Class:	Marks			
	Scored	Section B		
		Section C		

Section A

(Each question carries 3 marks, Max marks for section - 7)

1. Evaluate $\int xe^x dx$.
2. Find $f_x(2,3)$ and $f_y(2,3)$ for the function $f(x, y) = 2x^3y^2 + 4y + 5x$.
3. Evaluate $\lim_{(x,y) \rightarrow (-1,2)} \frac{xy}{x^2+y^2}$.

Section B

(Each question carries 6 marks, Max marks for section -18)

4. Find the average value of the function over the given interval $f(x) = e^x : [-1, \ln 5]$.
5. Evaluate the definite integral $\int_{-5/3}^{5/3} \sqrt{25 - 9x^2} dx ; u = 3x$.
6. Find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ if $z = x^4 \sin(xy^3)$.
7. Find the second partial derivatives of $f(x, y) = 10x^2y^4 - 6xy^2 + 10x^2$
 - a) f_{xx}
 - b) f_{yy}
 - c) f_{yx}
 - d) f_{xy}

Section C

(Answer any 1 Question, each question carries 10 marks)

8. Let $f(x, y) = \begin{cases} -\frac{xy}{x^2+y^2} & , (x, y) \neq (0,0) \\ 0 & , (x, y) = (0,0) \end{cases}$
 - a) Show that $f_x(x, y)$ and $f_y(x, y)$ exists at all points (x, y) .
 - b) Explain why f is not continuous at $(0,0)$.
9. Evaluate $\int \frac{x^2+x-2}{3x^3-x^2+3x-1} dx$.