



# RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATIONS

**MATRIC PRACTICE PAPER (2024)**

**(Mathematics)**

**Grade: XII**

**Chapter: Differentials And Partial Derivatives**

**Marks: 40 marks**

**Time: 90 minutes**

## SECTION A

**( 5x1=5 )**

**Choose the correct option.**

- If  $f(x) = \frac{x}{x+1}$ , then its differential is  
 (a)  $\frac{1}{x+1}dx$                       (b)  $\frac{-1}{x+1}dx$                       (c)  $\frac{1}{(x+1)^2}dx$                       (d)  $\frac{-1}{(x+1)^2}dx$
- If  $u(x,y) = x^2+3xy+y-2019$ , then  $\frac{\partial u}{\partial x}|_{(4,-5)}$  is equal to  
 (a) -4                      (b) -3                      (c) -7                      (d) 13
- A circular template has a radius of 10cm. The measurement of radius has an approximate error of 0.02cm. Then the percentage error in calculating area of this template is  
 (a) 0.2%                      (b) 0.4%                      (c) 0.04%                      (d) 0.08%
- If  $f(x,y) = e^{xy}$ , then  $\frac{\partial^2 f}{\partial x \partial y}$  is equal to  
 (a)  $xye^{xy}$                       (b)  $(1+xy)e^{xy}$                       (c)  $(1+y)e^{xy}$                       (d)  $(1+x)e^{xy}$
- If  $f(x,y,z) = xy+yz+xz$ , then  $f_x - f_z$  is equal to  
 (a)  $z-x$                       (b)  $y-z$                       (c)  $x-z$                       (d)  $y-x$

## SECTION B

**( 3x2=6 )**

**Answer the following.**

- For the function  $f(x) = x^2+3x$ , calculate the differential  $df$  when  $x=2$  and  $dx=0.1$ .
- If  $f(x,y) = x^3-3x^2+y^2+5x+6$ , then find  $f_x$  at  $(1,-2)$ .
- If the radius of a sphere with radius 10cm has to decrease by 0.1cm, approximately how much will its volume decrease?

