

**MCQs with One Correct Answer****PROBLEM**

$\frac{d^2x}{dy^2}$  equals

(2007 -3 marks)

(a)  $\left(\frac{d^2y}{dx^2}\right)^{-1}$                       (b)  $-\left(\frac{d^2y}{dx^2}\right)^{-1} \left(\frac{dy}{dx}\right)^{-3}$

(c)  $\left(\frac{d^2y}{dx^2}\right) \left(\frac{dy}{dx}\right)^{-2}$                       (d)  $-\left(\frac{d^2y}{dx^2}\right) \left(\frac{dy}{dx}\right)^{-3}$

(d)  $\frac{d^2x}{d^2y} = \frac{d}{dy} \left( \frac{dx}{dy} \right) = \frac{d}{dx} \left( \frac{dx}{dy} \right) \times \frac{dx}{dy}$

$$= \left\{ \frac{d}{dx} \left[ \frac{1}{\left(\frac{dy}{dx}\right)} \right] \right\} \times \frac{1}{\frac{dy}{dx}} = -\frac{1}{\left(\frac{dy}{dx}\right)^2} \times \frac{d^2y}{dx^2} \times \frac{1}{\left(\frac{dy}{dx}\right)}$$

$$= -\left(\frac{dy}{dx}\right)^{-3} \frac{d^2y}{dx^2}$$