



GAD-2338 Seat No. _____

B. Sc. (Sem. V) Examination
November / December - 2013
ES-31 : Business Mathematics - III
(New Course)

Time : 2 Hours]

[Total Marks : 50

Instructions : (1) All questions are compulsory.
(2) Figures to the right indicate marks of the corresponding question.

1 Attempt any **three** : 18

(a) $\frac{d}{dx}(\sqrt{\sin^3 x})$

(b) $\frac{d}{dx}\left(\tan^{-1} \frac{3x-x^3}{1-3x^2}\right)$

(c) $x\sqrt{1-y^2} + y\sqrt{1-x^2} = a, |x| < 1, |y| < 1$

then prove that $\frac{dy}{dx} = -\sqrt{\frac{1-y^2}{1-x^2}}$

(d) $\frac{d}{dx}(\sin^3 x \cdot \cos^3 x)$

2 Attempt any **three** : 18

(a) $\int \frac{\sin x}{1+\sin x} dx$

(b) $\int \sec^2 x \cdot \operatorname{cosec}^2 x dx$

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[Contd...

(c) $\int \frac{(2x+1)^2}{x-2} dx$

(d) $\int \cos^4 x dx$

3 Attempt any two :

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(a) $\int \cos 2x \cdot \cos 4x \cdot \cos 6x dx$

(b) $\int \frac{\tan x}{\sec x + \tan x} dx$

(c) If $\sin y = x \sin(a+y)$ then prove that

$$\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$$

(d) If $x^y = e^{x-y}$ then prove that $\frac{dy}{dx} = \frac{\log x}{(\log x + 1)^2}$.