SOUTH EASTERN UNIVERSITY OF SRI LANKA

FIRST YEAR EXAMINATION IN BACHELOR OF BUSINESS ADMINISTRATION / COMMERCE (EXTERNAL) – 2009 / 2010

HELD IN AUGUST – 2010

BBA / COM 13 (I) – BUSINESS MATHEMATICS

Answer five (05) Questions Only.

Time : 03 hours

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01. a) Factorize the following functions.

i. $6x^2 - 7x - 3$ ii. $\frac{2}{a^2} + \frac{3}{ab} - \frac{2}{b^2}$

b) Solve the following simultaneous questions.

i. $3x - 4y = 3$
$2x - 3y = 5$

c) If $(x - 1/x) = 4$ then find the value of $(x^4 - 1/x^4)$

d) Find the value of x; $4^{2x} \; X \; 16^x = 256$

02. a) Find the roots of the following quadratic equations.

i. $3x^2 + 5x - 2 = 0$ ii. $2x^2 - 3x - 2 = 0$

b) If α , β are the roots of the quadratic equation $x^2 - 4x + 2 = 0$ then find.

i. $\alpha^2 + \beta^2$ ii. $\alpha^3 + \beta^3$ iii. $\alpha^4 + \beta^4$

iii. $\frac{\beta}{\alpha^3} + \frac{\alpha}{\beta^3}$ iv. $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$

03. a) Without using log table find the value of x.

i. $2\log x + 3\log 3 = 3\log x + 2\log 2$

ii. $x \log 5 + \log 5 = 3 - 3 \log 2$

b) Using log table find the value of A.

$$A = \sqrt{\frac{35.42\ X\ 7.32}{10.75}} + \frac{34.15\ X\ 24.7}{20.14}$$

04. Estimate the limit of the following function.

a) $\lim_{x \to 1} \frac{(x^2 + 2x - 3)}{(x^2 + x - 2)}$

b) $\lim_{x \to 2} \frac{(x^{10} - 1024)}{(x^5 - 32)}$

c) $\lim_{x \to \alpha} \frac{(2x^2 - 3x - 1)}{(4 + 2x - 3x^2)}$

d) $\lim_{x \to 0} \frac{\sqrt{3 - x^2} - \sqrt{3 + x^2}}{3x^2}$

e) $\lim_{x \to 0} \frac{2x}{\sqrt{x + 1} - \sqrt{2x + 1}}$

05. Differentiate the following function.

a) $y = (2x^2 + 3)^2$

b) $y = (3x^2 + 4x + 1) \log (x^2 + 1)$

c) $y = \frac{e^{2x} (x^2 + 2x\ 1)}{(x^2 + 1)}$

d) Find the maximum and minimum point of $y = x^2 - 4x + 1$.

06. Integrate the following functions.

a) $y = (x - 1/x)^3$

b) $y = \frac{(x^2 + 2x + 3)}{(x + 1)}$

c) $y = \frac{(3x - 1)}{(3x^2 - 2x - 1)}$

d) $y = \frac{2}{x^2 - 4}$

e) Find the area between $x = 1$ and $x = 2$ of function $y = 2x^2 + 1$.

07. a) Estimate the determinate of the following matrix .

$$A = \begin{pmatrix} 2 & 2 & 1 \\ 3 & 5 & 1 \\ 1 & -1 & -1 \end{pmatrix}$$

b) Using the matrix applications solve the following simultaneous equations.

$$2x + 2y + y = 2$$
$$3x + 5y + y = 1$$
$$x - y - z = 3$$

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