SUBJECT CODE : MT/AC/BM34

B. Com. DEGREE EXAMINATION, NOVEMBER 2011
CORPORATE SECRETARYSHIP
THIRD SEMESTER

COURSE   : ALLIED – CORE
PAPER   : BUSINESS MATHEMATICS
TIME   : 3 HOURS   MAX. MARKS :   100

SECTION – A   (10 X 2 = 20)
ANSWER ALL THE QUESTIONS

1. Define column matrix and give an example.

2. Find the inverse of the matrix $\begin{pmatrix} 5 & 3 \\ 4 & 2 \end{pmatrix}$

3. Find the slope of the straight line joining the points (2,3) and (9,5)

4. Evaluate $\lim\limits_{x \to 0} \dfrac{x^2+2x-3}{x-1}$.

5. What is direct variation?

6. Define annuity.

7. Find $\dfrac{dy}{dx}$ if $x^2 + y^2 = 4ax$

8. Define elasticity of a function.

9. Evaluate $\int\limits_{0}^{1} (x^3 - 3x + 5)dx$.

10. Evaluate $\int \log x \ dx$.

SECTION – B   (5 X 8 = 40)
ANSWER ANY FIVE QUESTIONS

11. Solve the equations x + 2y + 5z = 23, 3x + y + 4z = 26, 6x + y + 7z = 47 by Cramer's rule.

12. Find the inverse of the matrix $\begin{pmatrix} -1 & 2 & -2 \\ 4 & -3 & 4 \\ 4 & -4 & 5 \end{pmatrix}$

13. Draw the graph of the function $f(x) = x^2 + 5x + 2$

14. A certain amount of money was invested at 8% simple interest and after 9 months an equal amount was invested at 10% simple interest. Find the period in which the amount in each case becomes Rs.5200. How much money was invested in each case?

15. Find the maximum and minimum values of the function $x^3 - 6x^2 + 7$.

16. a) Evaluate $\int \dfrac{2x^2 dx}{x^3 + 64}$

    b) Find the derivative of $\dfrac{x(x-1)}{x^2 + 4}$

17. The marginal cost function of manufacturing x units of a commodity is $6 + 10x - 6x^2$. Find the total cost and average cost given that the total cost of producing 1 unit is 15.

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SECTION – C   **(2 X 20 = 40)**

ANSWER ANY TWO QUESTIONS

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18. a) Show that the equations $x + y + z = -3$, $3x + y - 2z = -2$, $2x + 4y + 7z = 7$ are not consistent.

    b) The data below are about an economy of two industries P and Q. The values are in crores of rupees.

Producers	User		Final Demand	Total Output
	P	Q		
P	50	75	75	200
Q	100	50	50	300

    Find the outputs when the final demand changes to 300 for P and 600 for Q.

<div align="right">(10+10)</div>

19. a) If $p(y + z) = q(z + x) = r(x+y)$, Obtain the value of $\dfrac{x}{y}$

    b) Find the equation of the straight line passing through the point (1,2) and making intercepts on the co-ordiante axes which are in the ratio 2:3.   (10+10)

20. a) It is known that in mill the number of labourers x and the total cost C are related by $C = \dfrac{3}{2(x-4)} + \dfrac{3}{32}x$. What value of x will minimize the cost?

    b) Find the consumer's surplus for the demand function $P = 25 - x - x^2$ when $P_0 = 19$.

<div align="right">(10+10)</div>

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