

END TERM EXAMINATION

FIRST SEMESTER [BBA/BBA(TTM)], DECEMBER - 2010

Paper Code : BBA/BBA(TTM) - 105

Subject : Business Mathematics

Paper ID : 17105/50105

Time : 3 Hours

Maximum Marks : 75

Note : Attempt altogether Five questions. Q. No. 1 is compulsory.

Q. 1. Solve the following/Define :

- (a) For 100, 95, 90, 85 find S_{31}
- (b) Inventory flow analysis.
- (c) Langrangian multipliers.
- (d) Consumer and Producer surplus.
- (e) Find the number of permuation of word HREETI. (3×5=15)

Q. 2. Prove that :

- (a) ${}^n C_r = {}^n C_{n-r}$
- (b) ${}^n P_r = Lr \times {}^n C_r$ (15)

Q. 3. (a) Find the inverse of

$$A = \begin{bmatrix} 7 & -3 & 2 \\ 0 & 1 & 0 \\ 5 & 1 & 15 \end{bmatrix}$$

(b) Given the matrix

$$A = \begin{bmatrix} 7 & 5 & 9 \\ 3 & 8 & 4 \\ 6 & 2 & 1 \end{bmatrix}$$

Find the minor a_{32} and a_{22} (10+5=15)

Q. 4. Do the following functions have point of inflection?

(i) $f(x) = 0.25x^4 - 5x^3 + 37.5x^2 - 10x + 50$

(ii) $f(x) = 0.5x^4 - 3x^3 + 30x^2 + 5x + 20$

(iii) $f(x) = 3x^5 - 100x^4 + 1000x^2$ (5×3=15)

Q. 5. Given cost function $C = 4x + 450$

revenue function $\pi = 46x - 0.1x^2 - 450$

Find :

(a) MR

(b) MC

(c) AC

(5×3=15)

Q. 6. Find the following :

(i) $\int \frac{2x+7}{(x^2+7x-8)^5} dx$

(ii) $\int \frac{6x^2+4x+2}{(x^3+x^2+x+1)^3} dx$

(7·5×2=15)

Q. 7. If $MC = 20 + \frac{x}{30}$ $MR = 35$, the fixed cost is 2500.

Determine the maximum profit and profit maximizing level output. (15)

Q. 8. Write short notes on any THREE :

(a) Hawkins - Simon condition

(b) Lagrangian multipliers

(c) Variance analysis

(d) Consumer surplus

(e) Series vs Sequence

(5×3=15)

