(Please write your Exam Roll No.) *Exam Roll No. .....*

END TERM EXAMINATION

01014788

SECOND SEMESTER [B.COM(HONS)] MAY-JUNE 2014

Paper Code: BCOM-106 ***Subject: Business Mathematics***

Time: 3 Hours ***Maximum Marks: 75***

Note: Attempt any five questions.

Q1 (a) A committee consists of 10 members, 6 belonging to party A and 4 to party B. In how many ways can a committee of 5 to be selected so that the members of the party A are in majority. **(7.5)**

(b) Prove by induction $1 + 2 + 3 \ldots\ldots\ldots + n = n(n+1)/2$, where n belongs to set of positive integers. **(7.5)**

Q2 (a) Find the series 8 + 88 + 888 +.....n terms. **(7.5)**

(b) Three numbers are in G.P. Their product is 64 and sum is 124/5. Find these numbers. **(7.5)**

Q3 A, B and C have Rs.1250, Rs.1700 and Rs.2100 respectively. They utilized the amount to purchase three types of shares of price x, y and z respectively. A purchased 20 shares of price x, 50 shares of price y and 30 shares of prize z. B purchased 44 shares of price x, 30 shares of price y and 60 shares of price z. C purchased 12 shares of price x, 40 shares of price y and 100 shares of price z. Find x, y and z by matrix algebra. **(15)**

Q4 A Firm purchases two machines costing Rs.10000 and Rs.20000 respectively, each having a useful life of 4 years. Both have Rs. 5000 as salvage value at the end of four years. Find depreciation of each machine for each year using matrix algebra if:- **(15)**

(a) Both are depreciated by sum of year digit method.

(b) First is depreciated by sum of years digit method and second by straight line method.

Q5 (a) A firm produces two items x_1 and x_2. The market prices are given by $p_1 = 100 - 2x$ and $p_2 = 125 - 3xy$. The cost of production is $12x_1 + 11x_2 + 4x_1x_2$ for producing x_1 and x_2 items. Find how many items of each should be produced to have the joint profit maximum. **(7.5)**

(b) Verify Eulers Theorem for the function $u = \log[(x^3 + y^3)/(x + y)]$. **(7.5)**

Q6 Following are the demand functions of two commodities X and Y

$X = 2P_1^{-0.6} P_2^{0.8}$

$Y = 3P_1^{0.7} P_2^{-0.5}$ respectively.

Find the four partial marginal demand functions. Also, determine the nature of two commodities. **(15)**

Q7 (a) Find the PS if supply curve is $p = (9 + x)^{1/2}$ and quantity sold is 7 units. **(7.5)**

(b) If the demand and supply function are $p = 10 - q - q^2$ and $p + q2$ respectively, calculate the consumer's surplus and producer's surplus at equilibrium price. **(7.5)**

Q8 Evaluate:- **(2x7.5=15)**

(a) $\int (3x)dx/[(x-1)(x+2)]$

(b) $\int (x^2 \sin x)dx$

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