MMS-I

15/12/10

BM 01

Business Mathematics.

Roll No. : _____

Total No. of Questions: 07

Duration (hrs): 3 hrs.

Total No. of Printed Pages:04

Maximum Marks: 60

Note:

(i) Solve any five out of given seven questions only. Each Question is of 12 marks (12 x 5 = 60 marks).

(ii) Scientific Calculators are not allowed.

(iii) Draw neat and clean diagram wherever required.

(iv) Rough work should be done on supplement and should be added at the back of the main sheet.

(Marks 05)

Q) 1) (a)

Mr. X would like to invest in any one of the companies A, B and C whose profits of last 5 years are given as follows:

A(Rs 000) :	115	118	125	136	146
B(Rs 000) :	146	135	126	115	118
C(Rs 000) :	145	90	125	180	120

Which measure – 'measures of averages' or 'measures of dispersion' would actually help Mr X in making the correct decision?

Q) 1) (b) **(Marks 07)**

Following are the share prices of five industries in ten months. Using appropriate measure find out the industry whose prices are more consistent and which company is more variable:

Months	Share Prices (in Rs.)		
	Industry A	Industry B	Industry C
Jan	26	75	150
Feb	28	77	120
Mar	29	80	110
April	35	82	125
May	30	84	145
June	29	82	172
July	36	80	175

August	48	85	182
September	53	88	195
Oct.	76	97	196

Q) 2) (a) **(05 Marks)**

A manufacturer produces three products A, B and C and sells in two markets. Annual sales of these products in the two markets are given below:

Market	**Products**		
	Product A	Product B	Product C
Market I	10,000	2,000	8,000
Market II	6,000	20,000	4,000

If the unit sales price of A, B and C are Rs 25, Rs 12 and Rs 15 respectively, find the total revenue in each market.

Q) 2) (b) **(Marks 07)**

The total cost function of a firm is $C = 1/3x^5 - 5x^2 + 28x + 10$ where C is the total cost and x is the output. A tax at the rate of Rs. 2 per unit of output is imposed and the producer adds it to his cost. If market demand function is given by $P = 2530 - 5x$, where P is the price per unit of output, find the profit maximizing output and price.

Q) 3) (a) **(04 Marks)**

The following is a weekly salary record of 400 workers in a factory

Salary	**Undergraduates**	**Graduates**	**Total**
Below 300	180	20	200
300 – 400	40	60	100
Over 400	80	20	100
Total	300	100	400

A worker is selected at random and found to be graduate. Find the probability that his income is over 400.

Q) 3) (b) **(08 Marks)**

The probability is 2/5 that a batsman scores 100 runs in a cricket match. What is the probability that in 5 matches the batsman will score 100 runs in at least 3 matches?

Describe four important properties of 'normal distribution'.

Q) 4) (a) **(Marks 05)**

The following table gives the supply and price figures of a commodity for 6 days. Calculate the correlation nature and strength between price and supply by using scatter diagram method.

Days	Mon	Tue	Wed	Thu	Fri	Sat
Price	22	30	25	20	15	8
Supply	10	12	15	20	23	28

Q) 4) (b) **(Marks 07)**

We are given the total monthly expenditure E and family size N for five households as follows:

Expenditure(Rs.)	250	300	410	450	565
Household size	2	3	4	5	6

Fit a linear regression equation and find what is likely to be the expenditure for a household of size 8.

Q) 5) **(Marks 12)**

Net weight mentioned on a pack of biscuit is 150 gms. A regular consumer wishes to investigate whether this information is correct or not. For the purpose sample of 15 packets are being taken and their respective weights (in gms) are recorded which are as follows:

147 151 134 148 143 153 137 150
149 146 150 147 139 151 144

Using appropriate test, verify whether weight mentioned on biscuit packet by the company is correct or not.

Q) 6) **(Marks 12)**

Typing speed of two typists A and B (words/minute) are recorded as follows:

Typist A:	80	75	74	86	73	71	81	83	79	73
Typist B:	74	73	71	76	79	72	76	80	80	78

Using appropriate test, find out whether typist 'A' is more consistent than typist 'B' in terms of typing speed.

Q) 7) **(Marks 12)**

Short Answers:

(a) Explain 'Null Hypothesis' and 'Alternate Hypothesis' with two suitable examples.

(b) For what purpose ANOVA I is used?

(c) Define row and column matrices with examples

(d) Define demand function with suitable example

(e) How will you differentiate 'Regression Analysis' and 'Correlation Analysis?'

(f) How will you differentiate 'Central Tendency' and 'Measures of Dispersion?'