

Seat No.	
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SF-334

Total No. of Pages :3

M.B.A (Part-I) (Semester-I) (CBCS) (New)
Examination, December - 2016
MATHEMATICS AND STATISTICS FOR MANAGEMENT (Paper-III)
Sub. Code : 57106

Day and Date : Thursday, 29 - 12 - 2016

Time : 2.30 p.m. to 5.30 p.m.

Total Marks : 80

- Instructions :**
- 1) Question No.1 and 5 are Compulsory.
 - 2) Attempt any Two questions from question No.2 to 4.
 - 3) Figures to the right indicate full marks.
 - 4) Use graph papers where ever necessary.
 - 5) Use of non-programmable calculator is allowed.



- Q1) a) i)** A Company sells x tins of washing powder each day at rate Rs.15 a tin. The cost of manufacturing and selling these tins is Rs. 9 per tin plus a fixed daily overhead cost of Rs. 600. Determine the profit function. What is the profit if 500 tins are manufactured and sold a day? Interpret if the company manufactures and sells 100 tins a day? [6+4]

- ii) Find the compound interest on Rs. 2500 for 15 months at 8 % p.a. compounded quarterly.

- b)** Define Time series. Compute four yearly centered moving averages [10] and draw the graphs of original and trend values.

Years:	2000	2001	2002	2003	2004	2005	2006	2007
Profits:	110	116	122	134	130	138	145	150

- Q2) a) i)** Solve the equation
$$\begin{vmatrix} 3 & 8 & -2 \\ 6 & 5 & x \\ 15 & 18 & 10 \end{vmatrix} = 0$$
 [5+5]

P.T.O.

ii) Obtain A.M. and Mode for the following data.

X:	2.5	7.5	12.5	17.5	22.5	27.5	32.5
f	8	12	21	29	22	18	10

b) Define Q.D. and S.D.. Compute S.D. and C.V. for the data given below.

[10]

X:	5	10	15	20	25
F:	04	13	18	12	03

Q3) a) i) Find the inverse of the matrix $A = \begin{bmatrix} 1 & 3 & -2 \\ -3 & 0 & -5 \\ 2 & 5 & 0 \end{bmatrix}$ by adjoint method. [5+5]

ii) If $\bar{X}=150$, $\bar{Y}=68$, $\sigma_x=2$, $\sigma_y=2.5$, $r=0.6$, then estimate the most probable value of X if Y=50

b) Define Karl Pearson's correlation coefficient and obtain the same for the following data. [10]

X:	17	18	19	20	21	19	20	22	23	21
Y:	12	16	14	15	22	11	19	15	20	16

Q4) a) i) Solve the following equations by Cramer's rule: [5+5]

$$x + y + z = 6; \quad 2x + 3y - z = 5; \quad 6x - 2y - 3z = -7.$$

ii) The incidence of an occupational disease in an industry is such that the workers have 20% chance of suffering from it. What is the probability that out of 5 workers at least 4 will catch the disease.

b) Means and Ranges of 8 samples are given below. Draw \bar{X} -Chart [10] and state your conclusion. (Given $n=5$, $A_2=0.577$).

Sample:	1	2	3	4	5	6	7	8	9	10
Means:	43	49	45	44	37	51	37	43	47	46
Ranges:	5	6	7	5	7	8	4	6	4	6

Q5) Write notes on any Four

- a) Properties of Normal curve.
- b) Limitations in construction of index numbers.
- c) Present value annuity.
- d) Construction of range chart.
- e) Regression.
- f) Algebra of matrices.

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