Total No. of Questions : 5]

SEAT No. :

P3068

[Total No. of Pages : 3

[5204]Ext. - 14
M.A. (Part - I) (For External)
ECONOMICS
Mathematical Economics and Statistical Techniques
(2013 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates :

1) ***Attempt all questions.***
2) ***Figures to the right indicate full marks.***
3) ***Answers should be precise and to the point.***
4) ***Draw neat diagrams wherever necessary.***
5) ***Use of non-scientific calculator is allowed.***

Q1) Solve any one of the following : **[20]**

a) Factorise

i) $2x^2 - 10x + 12$

ii) $30x^2 + 52x + 14$

iii) $x^2 + 8x + 16$

iv) $A^2 - b^2$

b) Calculate the point elasticity of demand for the demand schedule $P = 60 - 0.2Q$ where price is

i) zero, ii) Rs. 20

iii) Rs. 40 and iv) Rs. 60

Q2) Solve any one of the following : **[20]**

a) Use inverses to solve system of equations

$$x_1 - x_2 + x_3 = 3$$
$$2x_2 - x_3 = 1$$
$$2x_1 + 3x_2 = 4$$

b) If a firm faces the marginal cost schedule $MC = 180 + 0.3q^2$ and the marginal revenue schedule is $MR = 540 - 0.6q^2$ and total fixed costs are Rs. 65. What is the maximum profit it can make?

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Q3) Solve any one of the following. **[20]**

a) The growth of production of fish for the period 1996-97 to 2002-03 is given below :

Year	Marine	Inland	Total
1996 - 97	6	3	8
1997 - 98	9	3	12
1998 - 99	11	7	18
1999 - 00	16	9	25
2000 - 01	17	12	30
2001 - 02	18	12	30
2002 - 03	13	9	21

b) In the following grouped data 'x' are the mid points of the class intervals and 'c' is a constant. If the arithmetic mean of the original distribution is 35.84, find its class intervals.

x - c	-21	-14	-7	0	7	14	21	total
Frequency	2	12	19	29	20	13	5	100

Q4) Solve any one of the following. **[20]**

a) The following table shows that monthly expenditures of 80 students of a university on morning breakfast.

Calculate the Arithmetic Mean, Standard Deviation and Coefficient of Variance.

Expenses	No. of students
78 - 82	2
73 - 77	6
68 - 72	7
63 - 67	12
58 - 62	18
53 - 57	13
48 - 52	9
43 - 47	7
38 - 42	4
33 - 37	2

b) Compute Correlation coefficient in the following series relating to cost of living and wages and comment :

Wages :	100	101	103	102	100	99	97	98	96	95
Cost	98	99	99	97	95	92	95	94	90	91

Q5) Solve on any four of the following. **[20]**

a) If Rs. 6000 is invested for 3 years at 8% interest compounded annually at the end of each year, what will be the final value of the investment will be?

b) $420 = 4x + 5y$ and $600 = 2x + 9y$ Find the values of x and y.

c) Derive the determinant of matrix $A = \begin{bmatrix} 4 & 3 & 10 \\ 7 & 0 & 3 \\ 12 & 2 & 5 \end{bmatrix}$

d) Following figures give the ages in years of newly married husbands and wives. Prepare a bi - variate Frequency Distribution.

Age of husband	24	26	27	25	28	24	27	28	25	26
Age of wives	17	18	19	17	20	18	18	19	18	19
Age of husband	25	26	27	25	27	26	25	26	26	26
Age of wives	17	18	19	19	20	19	17	20	17	18

c) Calculate the mean for the following frequency distribution :

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	
Frequency	6	5	8	15	7	6	3	50

f) Write a short note on merits and demerits of mean.

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