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(March)

ECONOMICS

(Major)

Course : 302

(Statistical Methods in Economics)

Full Marks : 80

Pass Marks : 32/24

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following as directed : $1 \times 8 = 8$

(a) Mention one merit of harmonic mean.

(b) Standard deviation can never be negative.

(Write True or False)

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(4)

Or

- (b) Calculate the standard deviation from the following data :

Marks in Economics	No. of students
0-10	5
10-20	12
20-30	15
30-40	20
40-50	18
50-60	10
60-70	6
70-80	4

4. (a) A bag contains 5 black and 7 white balls. A ball is drawn out of it and replaced in the bag. Then a ball is drawn again. What is the probability that (i) both the balls drawn were black, (ii) both were white and (iii) the first ball was black and the second ball is white.

$$4+4+3=11$$

Or

- (b) Explain with examples the concepts of the following :

$$2+2+2+2+3=11$$

- (i) Sample space
- (ii) Equally likely events
- (iii) Mutually exclusive events
- (iv) Exhaustive events
- (v) Independent and dependent events

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(Continued)

(5)

5. (a) Explain the following : 4+4+3=11

- (i) Census and sampling
- (ii) Testing and hypothesis
- (iii) Errors in hypothesis testing

Or

- (b) A sample of 400 students of undergraduate and 400 students of postgraduate classes was taken to know their opinion about autonomous colleges. 290 of the undergraduate and 310 of the postgraduate students favoured the autonomous status. Test that the opinion regarding autonomous status of colleges is independent of the level of classes of students. (Table value of χ^2 at 5% level is 3.84 for 1 d.f.) 11

6. (a) Nine students obtained the following percentage of marks in the College Test (X) and in the Final University Examination (Y). Calculate the correlation coefficient. 12

X	51	63	73	46	50	60	47	36	60
Y	49	72	74	44	58	66	50	30	35

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(6)

Or

- (b) The following table gives the ages and blood pressures of 10 women :

Ages (X)	56	42	36	47	49
Blood pressures (Y)	147	125	118	128	145

Ages (X)	42	60	72	63	55
Blood pressures (Y)	140	155	160	149	150

Estimate the regression equation $Y = a + bX$.

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7. (a) Compute (i) Laspeyres and (ii) Fisher's index numbers for the current year from the following data. Also show that Fisher's method satisfies time reversal test :

$$4+5+2=11$$

Commodity	Quantity		Price	
	1995	2000	1995	2000
A	8	6	20	40
B	10	5	50	60
C	15	15	40	50
D	20	25	20	20

Or

- (b) (i) Explain the problems of construction of index numbers.

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(Continued)

(7)

- (ii) In the following series of index number, shift the base from 1990 to 1993 :

Year	1990	1991	1992	1993
Index number	100	105	110	125

Year	1994	1995	1996	1997
Index number	135	180	195	205

$$5+6=11$$

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