

**3 SEM TDC ECO M 2**

**2 0 1 5**

( November )

**ECONOMICS**

( Major )

Course : 302

**( Statistical Methods in Economics )**

Full Marks : 80

Pass Marks : 32 (Backlog) / 24 (2014 onwards)

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) The probability of drawing a red-coloured card in a draw from a pack of 52 cards is \_\_\_\_.

( Fill in the blank )

(b) The algebraic sum of deviations from mean is

(i) 1

(ii) 0

(iii) mean multiplied by the number of observation

(iv) None of the above

( Choose the correct answer )



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- (c) The standard deviation of a binomial distribution is \_\_\_\_.

( Fill in the blank )

- (d) A method of sampling in which the population is divided into different homogeneous groups in terms of some characteristics is called

- (i) judgement sampling
- (ii) random sampling
- (iii) stratified sampling
- (iv) systematic sampling

( Choose the correct answer )

- (e) Both the regression coefficients should have the same sign.

( Write True or False )

- (f) The error of rejecting a correct null hypothesis is known as

- (i) type I error
- (ii) type II error
- (iii) Both type I and type II errors
- (iv) All of the above

( Choose the correct answer )

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- (g) If every item in a data set is multiplied by 3, then the standard deviation of the resulting data set is equal to the

- (i) original standard deviation
- (ii) standard deviation of the original data set multiplied by 3
- (iii) standard deviation of the original data set divided by 3
- (iv) None of the above

( Choose the correct answer )

- (h) The circular test is satisfied when

- (i)  $P_{01} \times P_{12} \times P_{21} = 0$
- (ii)  $P_{01} \times P_{12} \times P_{20} = 1$
- (iii)  $P_{10} \times P_{21} \times P_{20} = 1$
- (iv) None of the above

( Choose the correct answer )

2. Write short notes on any *four* of the following (within 150 words each) :

4×4=16

- (a) Arithmetic mean
- (b) Poisson distribution
- (c) Random sampling
- (d) Spearman's rank correlation
- (e) Fixed base and chain base index numbers



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3. (a) What do you mean by absolute dispersion and relative dispersion? Explain various methods of computing dispersion.  $3+8=11$

Or

- (b) Calculate standard deviation and coefficient of variation from the following distribution :  $6+5=11$

Age	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of persons	2	55	123	150	140	51	4

4. (a) (i) If, from a pack of cards, a single card is drawn, what is the probability that it is either spade or a king?
- (ii) What is the probability of getting a sum total of either 5 or 12 in a single throw of two dices?  $5+6=11$

Or

- (b) Define the following with example :  $2+2+2+3+2=11$

- (i) Exhaustive cases  
(ii) Mutually exclusive events

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- (iii) Sample space  
(iv) Random variable and mathematical expectation  
(v) Conditional probability

5. (a) Calculate the coefficient of correlation from the following data and interpret :  $9+3=12$

X	28	41	40	38	35	33	40	32	36	33
Y	23	34	33	34	33	26	28	31	36	38

Or

- (b) (i) Why are there two lines of regression for each bivariate distribution? When do the two regression lines coincide?
- (ii) A panel of judges A and B graded seven debators and independently awarded the following marks :

Debators	1	2	3	4	5	6	7
Marks by A	40	34	28	30	44	38	31
Marks by B	32	39	26	30	38	34	28

The eighth debator was awarded 36 marks by judge A while judge B



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was not present. If judge B was also present, how many marks would you expect him to award to the eighth debator?  $(2+2)+8=$

6. (a) What is sampling? Discuss the advantages of sample survey over census method. Mention the condition when census method may be used with advantage.  $2+6+3=1$

Or

- (b) From the following data, find the effectiveness of inoculation in preventing attack of the disease (The value of  $\chi^2$  for 1 degree of freedom at 5% level of significance is 3.84) :

	Attacked	Not attacked
Inoculated	120	240
Not inoculated	280	360

7. (a) (i) Why is Fisher's method considered as the ideal index method?
- (ii) Describe the use of index numbers for deflating time series data.  $5+6=1$

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(Continued)

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Or

- (b) From the following data, construct (i) Laspeyres' index, (ii) Paasche's index and (iii) Fisher's ideal index of price :

$$3+3+5=11$$

Commodities	2012		2013	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

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