(8 pages) **Reg. No. :** .....

Code No. : 5396 **Sub. Code : PESM 13**

M.A. (ECONOMICS) DEGREE EXAMINATION, NOVEMBER 2019.

First Semester

Economics – Core

STATISTICAL METHODS FOR ECONOMICS – I

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. If sum of the product of deviations of X and Y series from their means ie $\Sigma xy = 0$, the coefficient of correlation shall be

   (a) 1 (b) 0

   (c) –1 (d) None of these

2. If $r = 0.3$, r^2 will be ————

   (a) $\sqrt{0.09}$ (b) $\sqrt{0.03}$

   (c) 0.09 (d) 0.9

3. The average relationship between two variables is known as ————.

   (a) The line of Regression

   (b) Line of Correlation

   (c) Standard deviation

   (d) Standard Error

4. The regression line of Y on X passes through the plotted points in such a manner that

   (a) $\Sigma(Y - Y_c)^2 = 0$ (b) $\Sigma(Y_c - Y)^2 = 0$

   (c) $\Sigma(Y - X_c) = 0$ (d) $\Sigma(Y - Y_c) = 0$

5. In which method of time series, the original data is divided into two equal parts.

   (a) Graphic method

   (b) Semi-average method

   (c) Moving average method

   (d) Method of least square

6. Seasonal variations are caused by

   (a) Climate and weather condition

   (b) Customs and traditions

   (c) Habits

   (d) All the above

7. Historically the first index was constructed in _____.

(a) 1750 (b) 1950
(c) 1764 (d) 1948

8. A good index number is one that satisfies
(a) Unit test (b) Time reversal test
(c) Factor reversal test (d) All the above

9. For comparing the health conditions of two towns we have to calculate.
(a) Crude birth rate
(b) Standardized birth rate
(c) Net reproduction rate
(d) Standardized death rate

10. Vital statistics refers to all types of _____ statistics.
(a) Wages (b) Population
(c) Import (d) Export

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) What is the scatter diagram? How does it help us in studying the correlation between two variables, in respect of both their nature and extent?

Or

(b) The value of the same 15 students in two subjects A and B are given below, the two numbers within the brackets denoting the ranks of the same students in A and B respectively.

(1, 10) (2, 7) (3, 2) (4, 6) (5, 4) (6, 8) (7, 3) (8, 1)

(9, 11) (10, 15) (11, 9) (12, 5) (13, 14) (14, 12) (15, 13)

Use spearman's formula to find the rank correlation co-efficient.

12. (a) The following table gives the age of cars of certain make and annual maintenance costs, obtain the regression equation for costs related to age.

Age of cars in years	2	4	6	8
Maintenance cost (in Rs. hundred	10	20	25	30

Or

(b) State the uses of regression analysis.

13. (a) What are the uses of time series analysis?

Or

(b) Draw a trend line by the method of Semi-averages.

Year	2002	2003	2004	2005	2006	2007
Sales	60	75	81	110	106	120

14. (a) The following are the group index numbers and the group weight of an average working class family's budget construct the cost of living index number.

Group	Index No	Weight
Food	330	50
Clothing	208	10
Fuel and Lighting	200	12
House Rent	162	12
Miscellaneous	180	16

Or

(b) Write short notes on Consumer price index

15. (a) What are the uses of Vital Statistics?

Or

(b) Briefly explain the uses of 'Life table'.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

16. (a) Explain the different types of correlation with an example.

Or

(b) Ten competitors in a beauty contest are ranked by three judges in the following order.

1st Judge	1	6	5	10	3	2	4	9	7	8
2nd Judge	3	5	8	4	7	10	2	1	6	9
3rd Judge	6	4	9	8	1	2	3	10	5	7

Use the rank correlation coefficient to determine which pair of judges has the nearest approach to common tastes in beauty.

17. (a) From the following data obtain the two regression equations.

X	6	2	10	4	8
Y	9	11	5	8	7

Or

(b) From 10 observations on price (X) and supply (Y) of a commodity, the following summary figures were obtained.

$\Sigma X = 130, \Sigma Y = 220, \Sigma X^2 = 2288,$

$\Sigma XY = 3467$

Compute the line of regression of Y on X and interpret the result. Estimate the supply when price is 16 units.

18. (a) Assuming a four-yearly cycle calculate the trend by the method of moving average from the following data relating to the production of tea in India.

Year	1998	1999	2000	2001	2002	2003
Production	464	515	518	467	502	540
Year	2004	2005	2006	2007		
Production	557	571	586	612		

Or

(b) Calculate trend value from the following data using the method of least square.

Year	2002	2003	2004	2005	2006	2007
Production	7	9	12	15	18	23

19. (a) Describe the problems involves in the construction of index numbers.

Or

(b) An enquiry into the budgets of middle class families in a certain city gave the following information.

Expenses	Food 35%	Fuel 10%	Clothing 20%	Rent 15%	Miscellaneous 20%
Price (2006) Rs.	150	25	75	30	40
Price (2007) Rs.	145	23	65	30	45

What is the cost of living index number of 2007 as compared with that of 2006?

20. (a) Discuss the methods of obtaining vital statistics.

Or

(b) From the following table of population and unemployment for the standard and local population compute

(i) The general unemployment rate for the standardized population.

(ii) Standardized unemployment rate for the local population.

(iii) The crude unemployment rate for the local population.

	Standardize Population		Local Population	
Age	Population	Unemployment	Population	Unemployment
15 – 30	2500	5%	3000	4%
30 – 45	3500	8%	3000	9%
45 – 60	3000	12%	3500	12%
60 and above	1000	15%	500	20%
	10,000		10,000	