Kamala College, Kolhapur
(Autonomous)
B.C.A. (Part-I) (Semester-II)
NEP – 2020 Level – 4.5
Examination March/April, 2024.
OE 210-STATISTICS II (Paper - II)
Subject Code: OE 210

Day and Date: Monday, 15/04/2024   **Total Marks: 40**
Time   :   08:00 am to 10:00 am

Instructions:
1. *Question 1 is compulsory.*
2. *Attempt any four questions from Que. No 2 to Que. 7*
3. *Figures to the right indicate total marks for the question.*
4. *Use of a simple calculator is allowed.*
5. *Each question carries 8 marks.*

Q1) Multiple choice Questions.   [8]
   1. In a regression line of Y on X,the variable X is known as:
   a) Independent variable   b) Regressor
   c) Explanatory variable   d)All the above

   2. In the regression line Y = a+bx, a is the:
   a) Slope of the line   b) Intercept of the line
   c) Both (a) and (b)   d) Neither (a) nor (b)

   3. If X and Y are independent,the value of regression coefficient b is equal to :
   a) 1   b) 0
   c) ∞ d) Any positive value

   4. If the value of correlation coefficient between two variables is $r > 0.95$ then it indicates that there is a …..
   a) Poor   b) Low degree
   c) High degree   d) Non of the above

   5. A time series consist of:
   a) Two components   b) Three components
   c) Four components   d) Five components

6. Irregular variations in a time series are caused by :
   a) Floods
   b) Epidemics
   c) Lockouts and strikes
   d) All the above

7. The correlation coefficient between two variables for the following data is:

X	1	2	3	4	5

   a) -0.99
   b) +0.98
   c) +0.99
   d) 1

8. Seasonal variations means the variations occurring within:
   a) A number of years
   b) Parts of a year
   c) Parts of a month
   d) None of the above

Q2) Two housewives Neeta and Geeta asked to express their preference for different kinds of detergents and gave the following replies. Find Spearman's rank coefficient of correlation and interpret your result. **[8]**

Detergent	A	B	C	D	E	F	G	H	I	J
Neeta:	1	2	4	3	7	8	6	5	9	10
Geeta:	1	4	2	3	5	7	6	8	9	10

Q3) State the relation between regression coefficients and correlation coefficients. Write the equation of two lines of regression. Given $\sum X = 580$, $\sum Y = 370$, $\sum XY = 11{,}494$ $N = 12$, $\sum X^2 = 41{,}658$, $\sum Y^2 = 17205$

[8]

Q4) Explain various components of time series. Give two examples of each component. Apply the method of semi-average and estimate the value of 2020. **[8]**

Year	Production (Tonnes)
2012	40
2013	44
2014	42
2015	48
2016	51
2017	50
2018	54
2019	56

Q5) Compute 5-yearly moving average from the following data. Plot the original data and trend values on the same graph. **[8]**

Year	Students
2007	20
2008	24
2009	22
2010	26
2011	28
2012	34
2013	32
2014	35

Q6) Following are the marks obtained by 11 students in two papers of a subject. Compute the coefficient of correlation and interpret your result. Calculate the regression equations. **[8]**

Paper 1	80	45	55	56	58	65	68	70	75	86
Paper 2	82	56	50	48	60	64	65	70	74	90

Q7) Attempt any two of the following: **[8]**

a) Calculate the regression equations of X on Y and Y on X from the following data.

X	1	2	3	4	5
Y	2	5	3	8	7

b) Explain the concept of regression and give a two real-life example where regression is applicable.

c) Explain the Cyclical movement.