BACHELOR OF SCIENCE (CBCS-2018 COURSE)
F. Y. B. Sc. Sem-II :SUMMER- 2022
SUBJECT : STATISTICS : DESCRIPTIVE STATISTICS-II

Day : Monday
Date : 18-07-2022

S-18337-2022

Time : 11:00 AM-02:00 PM
Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of statistical tables and **CALCULATOR** is allowed.

Q.1 Attempt **ANY TWO** of the following: **[12]**

a) Explain the term correlation between two variables X and Y. Also discuss types of correlation.

b) For bivariate data $\overline{X} = 54$, $\overline{Y} = 29$, $b_{yx} = -1.5$, $b_{xy} = -0.2$, find :
i) correlation coefficient between X and Y **ii)** estimate Y for X = 60
iii) estimate X for Y = 30.

c) Define regression coefficients and state its any four properties.

Q.2 Attempt **ANY TWO** of the following: **[12]**

a) The regression equations are given by $8X - 10Y + 66 = 0$ and $40X - 18Y - 214 = 0$. Find $\overline{X}$, $\overline{Y}$, corr (X, Y). Also find σ_y given that $\sigma_x = 3$.

b) Calculate the coefficient of correlation from the following data:

X	2	4	6	8	10
Y	4	7	9	3	2

c) Derive the standard error of regression estimate.

Q.3 Attempt **ANY TWO** of the following: **[12]**

a) Compute Laspeyre's, Paasche's and Fisher's price index numbers for the following data;

Commodity	p_0	q_0	p_1	q_1
A	9	5	15	5
B	8	10	12	11
C	6	12	14	12

b) Describe the procedure of fitting of second degree curve.

c) The marks obtained by 10 students in Chemistry and Physics are:

Chemistry	40	50	60	70	80	70	70	83	85	90
Physics	40	60	40	50	40	90	70	80	83	70

Find the Spearman's rank correlation coefficient.

P.T.O.

Q.4 Attempt **ANY THREE** of the following: **[12]**

a) Given that $r = 0.4$, $\Sigma\left(x-\bar{x}\right)\left(y-\bar{y}\right) = 108$, $\Sigma\left(x-\bar{x}\right)^2 = 900$, $\sigma_y = 3$. Find the number of pairs of observation.

b) Mention the limitations of index numbers.

c) With usual notation prove that : $b_{yx} - b_{xy} = r^2$.

d) Draw the scatter diagram and interpret the result for the following data:

X	60	65	68	68	67	66	70	64	69	67
Y	68	67	67	70	65	68	70	66	68	66

Q.5 Attempt **ANY FOUR** of the following: **[12]**

a) If correlation coefficient between X and Y is -0.7528, find that between:

i) $3X - 10$ and $10 - Y$ **ii)** $\frac{X}{2}$ and $\frac{Y}{3}$ **iii)** $-3X$ and $-5Y$.

b) If Cov (X, Y) = -10, then find Cov (X – 10, Y + 15) and Cov (3X – 5, 10 – 2Y).

c) What is mean by Index numbers?

d) Spearman's rank correlation coefficient between X and Y is 2/3. If the sum of squares of difference between ranks is 55, assuming that no rank is repeated, find the number of pairs in the series.

e) Explain the term base year and current year.

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