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EXAMINATION : JUNE / JULY - 2022
SEMESTER - II
Sub: Statistics (BCA – 240-20/BCA-CS-240-20)

Date : 29 / 06 /2022

Total Marks : 60

Time: 2.00 pm to 04.30 pm

Instructions:

1. All questions are compulsory unless and otherwise stated.
2. Bold figures to the right of every question are the maximum marks for that question.
3. Candidates are advised to attempt questions in order.
4. Answers written illegibly are likely to be marked zero.
5. Use of scientific calculators, Log tables, Mollier Charts is allowed.
6. Draw neat and labelled diagrams wherever necessary.

Q.1. Solve (Any 4)

(8)

1. The line of regression X on Y is used if the value of
 - (a) X is given & that of Y is to be calculated.
 - (b) Y is given & that of X is to be calculated.
 - (c) 'r' is given & X is to be calculated.
 - (d) 'r' is given & Y is to be calculated.
2. When the given data is symmetric, ...
 - (i) Mean = Mode + Median
 - (ii) Mean > Mode > Median.
 - (iii) Mean < Mode < Median
 - (iv) Mean = Mode = Median.
3. For calculating Paasche`s Index Number, which of the following formulae is correct?
 - (i) $\frac{\sum P_1q_1}{\sum P_0q_0} \times 100$
 - (b) $\frac{\sum P_1q_0}{\sum P_0q_0} \times 100$
 - (c) $\frac{\sum P_1q_1}{\sum P_0q_1} \times 100$
 - (d) $\frac{\sum P_1q_1}{\sum P_1q_0} \times 100$
4. In case of any data, which of the following statements is correct?
 - (a) Square root of the Standard Deviation is equal to the Variance.
 - (b) Square of the Standard Deviation is equal to the Variance.
 - (c) Square root of the Variance is equal to Standard Deviation
 - (d) Both (b) & (c).
5. Which of the measures of central tendencies can be drawn graphically...?
 - (a) Mean & Mode
 - (b) Mode & Median
 - (c) Mean & Median
 - (d) Mean , Mode and Median.

Q.2. Solve (Any 3)

(9)

1. Write down True or False:
 - (i) Without calculating an Arithmetic Mean of data , no person can calculate the Standard Deviation of the same data.
 - (ii) More the value of Coefficient of Variation , less the consistency of the data is observed.
 - (iii) For calculating Fishers Index Number, Paasche`s and Laspeyre`s Index numbers must be known.

- For a certain data, Mean = 101, Mode = 96. Find the value of Median.
- Convert the following 'Inclusive type' of frequency distribution table into 'Exclusive type'.

Classes	10-10.50	11-11.50	12-12.50	13-13.50	14-14.50	15-15.50
Frequencies	1	1	2	3	2	1

- For the following data, find the value of 'x', if the Laspeyre's and Paasche's Index Numbers are same.

Commodities	Base Year prices	Base Year quantities	Current Year prices	Current Year quantities
A	2	10	2	5
B	2	5	x	2

Q.3. Solve (Any 2)

(8)

- Find Variance and coefficient of variation for the following data: 13,51,0,12,47,76,4,48,42,37.
- Find the Mode graphically:

Classes	0-10	10-20	20-30	30-40
Frequencies	2	5	3	1

- Find Laspeyre's and Paasche's Index numbers for the following data:

Commodities	Base Year prices	Base Year quantities	Current Year prices	Current Year quantities
A	20	10	25	8
B	35	8	55	6
C	40	12	50	10
D	30	15	42	10

Q.4. Solve (Any 3)

(15)

- Calculate Median :

Classes	0-6	6-12	12-18	18-24	24-30	30-36
Frequencies	3	10	8	7	1	1

- Find the arithmetic mean of X and arithmetic mean of Y for the lines of regressions :
 $8x - 10y + 66 = 0$ and $40x - 18y = 214$.
- The means of the two samples of sizes 10 and 20 are 24 and 45 respectively. Their respective standard deviations are 6 and 11. Obtain the standard deviation of the sample of size 30, obtained by combining the two samples.

- For a bivariate data: $\bar{x} = 53$, $\bar{y} = 28$, $b_{xy} = -1.2$, $b_{yx} = -\left(\frac{3}{10}\right)$

- Estimate the value of Y when X = 50.
- Estimate the value of X when Y = 25.

Q.5. Solve. (Solve any 2)

(20)

1. The two equations of lines of regressions are $6x + y - 31 = 0$ and $3x + 2y - 26 = 0$, Find :

- (i) Correlation coefficient between X & Y.
- (ii) Estimate the value of Y when X = 2.
- (iii) Estimate the value of variance of X when variance of Y = 36.

2. Represent the following data by :

- (i) Subdivided bar diagram
- (ii) Percentage bar diagram.

Divisions	A	B	C	D	E
No. of passed students	72	35	40	49	30
No. of failed students	08	35	60	21	20

3. For a data given below,

$\sum x = 100$, $\sum x^2 = 2250$, $\sum y = 100$, $\sum y^2 = 2250$, $\sum xy = 1900$ and Karl Pearson's correlation coefficient, $r = -0.4$, find the number of pairs of X & Y available in the data.
