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**B.Com. (Part-II) (Semester-IV) (CBCS)**  
**Examination March/April, held in May 2023**  
**BUSINESS STATISTICS (Paper - II)**  
**Subject Code: 73524**



**Day and Date: Saturday, 10/06/2023**

**Total Marks:50**

**Time: 10.30 a.m. to 12.30 p.m.**

**Instructions:**

1. Attempt any FIVE questions.
  2. Use of a simple calculator is allowed.
  3. Each question carries 10 marks.
- Graph papers will be supplied on request.

Q1) Attempt any two from the following: [10]

a) If the first and third quartiles of the normal distribution are 40 and 70, find their mean and variance.

b) State the relationship between Laspeyre's, Paasche's, and Fishers' price index numbers. Find the Laspeyre's Price index number if Paasche's and Fisher's price index numbers are 125 and 126 respectively.

c) State the components of time series. Explain seasonal variation in the time series with an example.

Q2) Explain the construction of a c-chart. [10]

The numbers of defects observed in the 15 samples are given below:

7, 12, 3, 20, 21, 5, 4, 3, 10, 8, 0, 9, 6, 7, 20

Construct a c-chart and state your conclusion.

Q3) Explain the meaning of time series. State its uses. Compute 4 yearly moving central averages from the following data: [10]

Year	2011	2012	2013	2014	2015	2016	2017	2018
Values	10	12	11	14	9	10	13	11

Plot the original and trend values on the same graph



Q4) Define Normal distribution. State the properties of the normal probability curve. If  $X$  is normally distributed with a mean of 45 and a variance of 16, find [10]

i)  $P(X \leq 53)$

ii)  $P(X \geq 41)$

iii)  $P(40 \leq X \leq 50)$

(Given Area under curve for S.N.V. from  $Z = 0$  to  $Z = 1$  is 0.3413, from  $Z = 0$  to  $Z = 2$  is 0.4772 and from  $Z = 0$  to  $Z = 1.25$  is 0.3944)

Q5) Define index numbers and state their uses. The prices and quantities of commodities for 2009 and 2010 are given below: [10]

Compute Laspeyre's, Paasche's, and Fisher's price index numbers.

Commodity	2009		2010	
	Price (in Rs.)	Quantity (in Kg.)	Price (in Rs.)	Quantity (in Kg.)
A	15	5	20	7
B	10	9	18	8
C	22	4	24	6

Q6) Define the probability of an event A. A box contains 20 tickets, numbered 1 to 20. A ticket is drawn at random from the box. Find the probability that a number on the ticket will be: [10]

i) a multiple of 3

ii) a multiple of 5

iii) a multiple of 3 or 5

iv) a multiple of 3 and 5.

Q7) Attempt any two from the following: [10]

a) Compute the simple aggregate index number from the following data and comment on it.

Commodity	Rice	Wheat	Oil	Fish	Potato
Price in 2011	25	20	60	70	15
Price in 2021	40	34	120	140	30

b) Difference between chance causes and assignable causes of variations.

c) Write the probability mass function (p. m. f.) Binomial distribution. Find its parameters if the mean and variance of Binomial distribution are 6 and 3, respectively.

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