



WEST BENGAL STATE UNIVERSITY
B.Com. Programme 2nd Semester Supplementary Examination, 2021

FACGCOR04T-B.Com. (DSC4)
BUSINESS MATHEMATICS AND STATISTICS

Time Allotted: 2 Hours

Full Marks: 50

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

GROUP-A

1. Answer any **five** questions from the following: 2×5 = 10
- (a) If ${}^{20}C_r = {}^{20}C_{r+4}$, find r .
- (b) Which of the following sets is finite and which is infinite?
- (i) $G = \{x : x \in \mathbb{N} \text{ and } x \text{ is odd}\}$
- (ii) $H = \{x : x \in \mathbb{N}, \text{ and } x^2 - 5x + 6 = 0\}$
- (c) Find the general term in the expansion of $(x - 1/x)^8$
- (d) Find the Geometric Mean (G.M.) of 3, 6, 24, 18
- (e) Two coins are tossed together. Describe the sample space.
- (f) If $r_{xy} = 0.6$, find the value of r_{uv} , when $u = 2x - 3$, $v = 3y + 2$
- (g) Find the median of 94, 33, 85, 67, 32, 81, 48, 69
- (h) Find the effective rate equivalent to nominal rate of 6% converted quarterly.

GROUP-B

Answer any **four** questions from the following

5×4 = 20

2. If $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
Find K so that $A^2 = KA - 2I$
3. A bag contains 5 white and 4 black balls. One ball is drawn from the bag and replaced and then a second ball is drawn. What is the chance that the two balls drawn are of different colors?
4. Using 3 year moving average method determine the trend and short term fluctuations for the following data:

Year:	2013	2014	2015	2016	2017	2018	2019
Value:	21	34	45	28	40	57	73

5. Rahim deposit Rs. 500 at the end of every year for 6 years at 6% interest. Determine Rahim's money value at the end of 6 years.
6. In a group of students, 50 students know Hindi, 25 know English and 12 know both. Each of the students knows either Hindi or English. How many students are there in the group?
7. Calculate 'r' by using Pearson product moment correlation coefficient formula of the following data:

x:	1	2	3	4	5	6
y:	6	4	3	5	4	2

GROUP-C**Answer any two questions from the following**

10×2 = 20

8. (a) Using the data given below calculate the price index number for the year 2020 by (i) Laspeyres' formula, (ii) Paasche's formula and (iii) Fisher's formula with the year 2011 as base:

6+4

Commodity	Price (Rs.)		Quantity ('000 kg)	
	2011	2020	2011	2020
Rice	9.3	4.5	100	90
Wheat	6.4	3.7	11	10
Pulses	5.1	2.7	5	3

- (b) In a population of 250 people the number of married is 100. Out of 75 people who are unemployed 30 belonged to the married group. It is required to find out whether the attributes marriage and unemployed are independent, positively associated or negatively associated.
9. Fit a quadratic trend equation by the method of least squares from the following data and estimate the trend value for the year 2020:

Year:	2013	2014	2015	2016	2017	2018
Price (Rs):	250	207	228	240	281	392

- 10.(a) Determine whether the expansion of $(x^2 - 2/x)^{10}$ will contain a term containing x^6 ?
- (b) The correlation coefficient $(r) = 0.60$, variance of x and y are respectively 2.25 and 4.00; $\bar{x} = 10$, $\bar{y} = 20$. From the above data find the regression equations. Find the estimated value of y when $x = 25$.

N.B. : Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.

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Answer Script Submission e-mail Id: scm.splexam.21@gmail.com