



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY
Question Paper

B.Com. Honours Examinations 2021
(Under CBCS Pattern)
Semester - III
Subject : ACCOUNTING & FINANCE
Paper : GE 3 - T & P
(Business Statistics)

Full Marks : 60 (Theory-40 + Practical-20)
Time : 3 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

(Theory : Marks - 40)

Group-A

1. Answer any **three** of the following questions : 12×3=36
- (a) (i) Give the classical definition of probability.
- (ii) An urn A contains 2 white and 4 black balls. Another urn B contains 5 white and 7 black balls. A ball is transferred from urn A to urn B. Then a ball is drawn from urn B. Find the probability that it will be white.
- (iii) In a bolt factory, machines A, B and C manufacture respectively 25%, 35% and 40% of the total output. Of their output 5%, 4% and 2% are defective

bolts. A bolt is drawn at random from the product and it is found to be defective. What are the probabilities that it was manufactured by machines A, B and C?

2+4+6

- (b) (i) What is called probability mass function (p.m.f.) and give the conditions which are to be satisfied by a p.m.f.
- (ii) If 5% of the electric bulbs manufactured by a company are defective, use poisson distribution to find the probability that in a sample of 100 bulbs (1) none is defective (2) 5 bulbs will be defective. [Given : $e^{-5} = 0.007$]
- (iii) Prove that poisson distribution as a limiting form of the binomial distribution.

2+6+4

- (c) (i) Calculate the price index number by Fisher's ideal formula.

Commodities	2015		2016	
	Price (Rs.)	Quantities (Kg)	Price (Rs.)	Quantities (Kg)
A	20	8	40	6
B	50	10	60	5
C	40	15	50	10
D	20	20	20	15

With the help of above data, show that it satisfies Time Reversal Test.

- (ii) What is a cost of living index number? 10+2
- (d) (i) Prove that correlation coefficient between two variables lies between -1 and $+1$.
- (ii) For the variables x and y , the two regression lines were obtained as $3x + 2y - 25 = 0$ and $6x + y - 30 = 0$. Identify the two regression lines and find the means of x and y and the coefficient of correlation. 5+7
- (e) (i) Find the mean, median and mode for the following distribution.

Cost of production : of sugarcane	2-6	6-10	10-14	14-18	18-22	22-26	26-30	30-34
Frequency :	1	9	21	47	52	36	19	3

- (ii) \bar{X} is the mean of X_1, X_2 and X_3 . If x_1, x_2, x_3 are the deviations of X_1, X_2, X_3 from \bar{X} respectively, prove that $x_1^2 + x_2^2 + x_3^2 = X_1^2 + X_2^2 + X_3^2 - 3\bar{X}^2$ 9+3
- (f) (i) Amal can solve 90% of the problems given in a book and Swarnali can solve 70%. What is the probability that at least one of them will solve a problem selected at random? 12
- (ii) A person having no idea about the subject is appearing a 'True-False' test. What is the probability of giving seven correct answers out of 10 questions attempted?

Group - B

2. Answer any **two** of the following questions : 2×2=4

- (a) State properties of normal distribution. 2
- (b) Suppose x is $B(m, p)$ where the symbols have their usual meaning. The mean and the variance are 5 and 4 respectively. Find p and q . 2
- (c) Find geometric Mean of the following numbers : 2
8, 36, 48
- (d) Find correlation coefficient 'r', where regression co-efficients, b_{xy} and b_{yx} are $\frac{4}{5}$ and $\frac{9}{20}$ respectively. 2

(Practical)

Paper - GE 3-P

(Business Statistical)

Marks : 20

A. Answer any **one** of the following questions : 20×1=20

- (a) (i) What do you mean by "weighted mean"? Distinguish between simple and weighted mean and state the circumstances under which the latter should be employed.

- (ii) Note down the different steps to find mean using spread sheet and following data.

5+15

Cost of production : 2-6 6-10 10-14 14-18 18-22 22-26 26-30 30-34
of sugarcane

Frequency : 1 9 21 47 52 36 19 3

- (b) (i) Define standard deviation and co-efficient of variation. Distinguish between absolute and relative measures of dispersion.

- (ii) Write the step to calculate the co-efficient of variation using Excel Sheet.

5+15

Monthly wages : 125-175 175-225 225-275 275-325 325-375 375-425 425-475 475-525 525-575
(in Rs.)

No. of workers : 2 22 19 14 3 4 6 1 1

- (c) Write down the steps to draw a pie-chart to represent the following data relating to the production cost of a manufacturer : 20

	Amount (in ₹)
Cost of materials	12,00,000
Cost of labour	9,00,000
Cost of office expenses	6,00,000
Cost of selling expenses	8,00,000
Cost of distribution expenses	5,00,000
Miscellaneous expenses	15,00,000
