

U.G. 4th Semester Examination - 2022**B.B.A.****[HONOURS]****Course Code : BBBACCHT 402****Course Title: Statistics for Business Decisions**

Full Marks : 40

Time : 2 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **ten** questions of the following: $1 \times 10 = 10$

- a) Give one example each of continuous and discrete variable.
- b) What is frequency polygon?
- c) If the A.M. of 3, 5, x, 12, 17 be 9; find the value of x.
- d) If two intersecting regression lines are $X=5+0.8Y$ and $Y=8+0.2X$, what is the value of correlation coefficient between X and Y?
- e) Find the coefficient of variation of a distribution with mean= 5 and SD= 2.6.

- f) Find the geometric mean of 3, 12 and 48.
- g) Write any two assumptions of Classical Linear Regression Model.
- h) The three quartiles of a variable 'x' are 5, 12 and 17. Find the Quartile Deviation.
- i) A bag contains 6 white and 4 black balls. One ball is drawn. What is the probability that it is white?
- j) State the classical definition of probability,
- k) Find Out $A \cup B$ and $A \cap B$, when $A = \{1,3,4,5,6\}$ and $B = \{2,4,6,8\}$.
- l) What is meant by mutually exclusive event?
- m) Define Stratified Random Sampling.
- n) Find the AM of two observations if their GM and HM are 15 and 9 respectively.
- o) Define Null set.

2. Answer any **five** of the following questions: $2 \times 5 = 10$

- a) What do you mean by primary data? How can they be collected?
- b) Find the Range of the daily wages of 10 persons:
24, 18, 25, 16, 20, 28, 22, 17, 21, 27.
What would be the value of range if each observation is increased by 5?

- c) Two dice are thrown simultaneously and the points on the dice are multiplied together. Find the probability that the product is 12.
- d) Given that $P(A) = \frac{3}{8}$ and $P(B) = \frac{5}{3}$ and $P(A+B) = \frac{3}{4}$. Find $P(A/B)$ and $P(B/A)$.
- e) Find the mean and SD of the first n natural numbers.
- f) Prove that $\sum (X_i - \bar{X}) = 0$, where $i=1,2,3,\dots,n$ and \bar{X} =mean of the distribution.
- g) Given that $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ and $P(AB) = \frac{1}{4}$ then find the value of $P(\bar{A})$ and $P(A+B)$.
- h) Find the median and mode of the following data:
4, 7, 10, 7, 9, 15, 12, 7, 6, 9.

3. Answer any **two** of the following questions:

$$5 \times 2 = 10$$

- a) Draw a pie chart to represent the following data relating to the production cost of manufactures:

Cost of Materials (Rs.)	38,400
Cost of Labour (Rs.)	30,720
Direct Expenses (Rs.)	11,520
Overhead Expenses (Rs.)	15,360
- b) Calculate the mean and standard deviation of the following data:

Class	0-10	10-20	20-30	30-40	40-50
Frequencies	12	33	30	15	10

- c) Prove that correlation coefficient 'r' lies between -1 and $+1$.

4. Answer any **one** of the following questions:

$$10 \times 1 = 10$$

- a) Prove that $A.M \geq G.M \geq H.M$, where A.M, G.M and H.M represent Arithmetic Mean, Geometric Mean and Harmonic Mean respectively.
- b) i) State and prove the theorem of total probability.
 ii) Five men in a company of 20 are graduates. If 3 men are picked out of 20 at random, what is the probability that they are all graduates? What is the probability of at least one graduate? 4+6
- c) Find the two lines of regression from the following data:

Age of Husband	25	22	28	26	35	20	22	40	20	18
Age of Wife	18	15	20	17	22	14	16	21	15	14

Hence estimate (i) the age of husband when the age of wife is 19 (ii) the age of wife when the age of husband is 30. 8+2