

**W-3813(A)****B.C.A (Sixth Semester) Examination, (Second Chance) June-2020****PROBABILITY AND STATISTICS****Paper - I***Time : Three Hours**Maximum Marks : 80 (For Regular Students)**Minimum Pass Marks : 32*

**Note :** Attempt **all** questions. Solve any two parts from each question. All questions carry equal marks.

**Unit-I**

- Q.1. a) Write short notes on the following :
- Histogram
  - Cumulative frequency distribution
- b) Find mean of the following data :
- |       |    |
|-------|----|
| 10-19 | 1  |
| 20-29 | 0  |
| 30-39 | 1  |
| 40-49 | 10 |
| 50-59 | 17 |
| 60-69 | 38 |
| 70-79 | 9  |
| 80-89 | 3  |

- c) Calculate the standard deviation and coefficient of variation of the following distribution

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of student	1	4	10	22	30	35	10	7	1

**Unit-II**

- Q.2. a) Compute the first three moments about mean from the following data

Class Interval	0-10	10-20	20-30	30-40
Frequency	1	3	4	2

- b) Find the moment generating function of the random variable 'X' having p.d.f.

$$f(x) = \begin{cases} x & , 0 \leq x < 1 \\ 2-x & , 1 \leq x < 2 \\ 0 & \text{other wise} \end{cases}$$

- c) 'A' Can hit a target 4 times in 5 shots; B, 3 times in 4 shots; c, 2 times in 3 shots. They fire a volley. What is the probability that atleast two shots hit the target?

**Unit-III**

- Q.3. a) Find the value of  $\lambda$  for which the function is p.d.f. if

$$f(x) = \begin{cases} \lambda x^2, & 0 \leq x \leq 3 \\ 0 & \text{other wise} \end{cases}$$

Also compute  $P(1 \leq x \leq 2)$

- b) In a Binomial distribution prove that mean is  $np$  and variance is  $npq$ .  
 c) Explain normal distribution and its properties.

**Unit-IV**

- Q.4. a) Calculate the Karl Pearson's correlation coefficient between  $x$  and  $y$ :

$x$	150	153	154	155	157	160	163	164
$y$	65	66	67	70	68	53	70	63

- b) If  $4x - 5y + 33 = 0$  and  $20x - 9y = 107$  are two lines of regression. Find  
 i) Mean value of  $x$  and  $y$   
 ii) Regression coefficients  
 iii) Correlation coefficients  
 c) Fit a parabolic curve of regression of  $y$  in  $x$  to the following data

$x$	1.0	1.5	2.0	2.5	3.0	3.5	4.0
$y$	1.1	1.3	1.6	2.0	2.7	3.4	4.1

**Unit-V**

- Q.5. a) Write short notes on the following :  
 i) Level of significance  
 ii) Errors of kind I and kind II  
 b) From the table given below whether the colour of son's eyes is associated with that of father's eyes? Given that the value of chi-square for 1 d.f at 5% level of significance is 3.841.

Eye colour Son's

	Not light	Light
Eye colour of father	Not light	Light
	230	148
	Light	471

- c) Ten objects are chosen at random from the population and their heights are found to be in inches  
 63, 63, 64, 65, 66, 69, 69, 70, 70, 71  
 Discuss the suggestion that the mean height in the universe is 65 inches, given that for 9 d.o.f the mean of 't' and 5% level of significance is 2.262

