Seat No:_____ **Enrollment No:_____**

PARUL UNIVERSITY
FACULTY OF MANAGEMENT
BBA Summer 2017 - 18 Examination

Semester: 3 **Date: 13-06-2018**
Subject Code: 06191206 **Time: 02:00 pm to 04:30 pm**
Subject Name: Business Statistics - I **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 (A) Multiple Choice Of Questions : **(05)**

(1) If coefficient of co-relation $r = -1$ then the two variables will have _____
- (a) Perfect positive relation
- (b) Positive relation
- (c) Perfect negative relation
- (d) Negative relation

(2) The Correlation coefficient are independent of change of _____
- (a) Scale
- (b) Origin and Scale
- (c) Origin
- (d) None of above

(3) When a dice is thrown, A and B are the events of getting odd numbers and even numbers respectively then $p(A \cup B) =$ _____
- (a) 1
- (b) 0. 5
- (c) 0
- (d) 0.8

(4) If $E(x) = 2$ and $E(x^2) = 25$ then $Variance\,(x) =$ _____
- (a) 27
- (b) 23
- (c) 29
- (d) 21

(5) The mean of poisson distribution is 1.44. its SD= _____
- (a) 2.88
- (b) 14.4
- (c) 1.2
- (d) 1.22

Q.1 (B) Define the following : (Each of 1 mark) **(05)**

(1) Regression Analysis
(2) Sample space
(3) Independent Event
(4) Exhaustive Event
(5) Probability mass function

Q.1 (C) Direct Questions : (Each of 1 Mark) **(05)**

(1) What do you mean by negative correlation?

(2) Write construction of $\bar{X}$ chart

(3) If A and B are two independent events , $P(A) = \frac{1}{2}$ and $P(B) = \frac{1}{5}$ find $P(A \cup B)$

(4) Write a probability mass function of Binomial distribution.

(5) The mean and variance of Binomial distribution are 15 and 6 respectively. Find the values of n and p.

Q.2 (A) Answer the following questions.

(1) The following data are obtained for two variables x and y: **(04)**

$n = 25$, $\sum x = 125, \sum y = 100, \sum x^2 = 650, \sum y^2 = 460, \sum xy = 508$

However, Later on it was observed that two pairs (8,12) and (6,8) were wrongly taken as (6,14) and (8,6). Find the correct value of correlation coefficient.

(2) A group consists of 7 men and some women. The probability of selecting two women from them is $\frac{1}{15}$. Find the number of women in the group. **(03)**

Q.2 (B) Answer the following questions.

(1) The following information is obtained from result of an example. **(04)**

	X	Y
Mean	7.5	12.5
Standard Deviation	4.5	9
Correlation coefficient between x and y =0.9		

Obtain the two regression lines.

(2) If $p(A)=\frac{1}{3}, p(B')=\frac{1}{4}, p(A\cap B)=\frac{1}{6}$, find $p(A\cup B), p(A'\cap B')$ **(04)**

Q.3 (A) Answer the following questions.

(1) An unbiased coin is tossed for 3 times. Find the probabilities of getting **(04)**

(i) 3 heads

(ii) At most 2 head

(2) There are 4 black and 1 white balls in a box. Two balls are taken from it, find the expected number of white balls. **(03)**

Q.3 (B) Answer the following questions.

(1) On an average 1.5 percent of electric bulb are found to be defective in a bulb manufacturing factory. Using Poisson distribution find the probability of 4 defective bulbs in a box of 200 bulbs. **(04)**

$$\left(e^{-3}=0.0498\right)$$

(2) Two cubical dice are thrown simultaneous. Find the probability of getting : **(04)**

(i) Total '7'

(ii) Total at least '9'

Q.4 Attempt any two questions. (Each of 7.5 mark) **(15)**

(1) Find Correlation Coefficient from the following data :

X	100	101	102	102	100	99	97	98	96	95
Y	98	99	99	97	95	92	95	94	90	91

(2) Find the equations of regression lines and the correlation coefficient from the following data:

X	3	2	-1	6	4	-2	5	7
Y	5	13	12	-1	2	20	0	-3

(3) The following table gives the information regarding life hours of 5 fluorescent of 10 different samples. Draw $\overline{X}$ and R charts and state your conclusions.

Sample	1	2	3	4	5	6	7	8	9	10
$\overline{X}$	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
R	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

$$\left[n=5, A_2=0.577, D_3=0, D_4=2.115\right]$$

(4) State Baye's theorem. In a factory there are three machines and they are producing respectively 200,300,500 units of a daily. The proportion defectives of these machines are 2%, 4% and 3% respectively. An item is taken at random from the day's production and it is found to be defective .find the probability that the item is produces by the

(i) First machine

(ii) Second machine

(iii) Third machine