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

PARUL UNIVERSITY

FACULTY OF MANAGEMENT

BBA Winter 2019 - 20 Examination

Semester:3 **Date:16/12/2019**
Subject Code: 06191206 **Time:02:00 pm 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 Do as Directed.

A).Multiple choice type questions/Fill in the blanks. (Each of 1 mark) **(05)**

1. If two variables are linearly independent then the correlation coefficient is _____

a) 0.5 **c)** -1
b) 0 **d)** +1

2. Total probability of happening an event and not happening an event is _____.

a) 0 **c)** 1
b) -1 **d)** 1/2

3. The mean and variance of Binomial Distribution is _____ and _____.

a) np and npq **c)**) nq and mq
b) 1 and 0 **d)** p and q

4. The correlation coefficient lies between _____ and _____ .

a) -1 and 1 **c)** 0 and 1
b) -2 and 2 **d)** -1 and 1

5. One of the regression coefficient of two perfectly correlated variables is 0.5, hence the other regression coefficient is _____.

a) 0.5 **c)** 1
b) -1 **d)** 2

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

1. Mutually exclusive events
2. Random Variable
3. Probability Mass Function,
4. Correlation
5. Sample space

C).Direct questions. (Each of 1 mark) **(05)**

1.Find the value of $E(3x+2)$ where $E(x)=0.5$?

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

3. $\overline{X}$ and R charts are based on which distribution.

4. Write difference between correlation and Regression?

5. Explain Conditional probability

Q.2 Answer the following questions.

A).1). A group consists of seven 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)**

2). A person tosses 3 coins simultaneously. He gets Rs. 8 if 3 heads appear, Rs. 4 if 2 heads appear and Rs. 2 if one head appears. What penalty should be charged if no head appears in order that game is fair? **(04)**

B). 1) The Probability distribution of a random variable x is as follows **(04)**

x_i	-1	0	1	2	3	4
$P(x_i)$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$

Find the mean and variance of x.

2) If A, B and C are three mutually exclusive and exhaustive events and if $3P(A) = 2P(B) = 6P(C)$, find $P(A \cup B)$ **(04)**

Q.3 Answer the following questions.

A). 1) A bag contains 30 balls numbered 1 to 30. One ball is drawn at random. Find the probability that the number of the ball drawn will be a multiple of (i) 5 or 7 and (ii) 3 or 7 **(03)**

2) For a Binomial distribution n=5 and $P(x = 1) = P(x = 2)$, find $P(x = 3)$. **(04)**

B). 1) There are 100 misprints in a book of 100 pages. If a page is selected at random, find the probabilities that (i) there will be no misprint in the page (ii) there will be 1 misprint (iii) there will be at the most 2 misprints. **(04)**

2) There are 10 electric bulbs in a box in which 3 are defective bulbs. If 3 bulbs are selected at random from the box, find the expected number of defective bulbs **(04)**

Q.4 Attempt any three questions. **(Each of 5 mark)** **(15)**

1. Find the Karl Pearson's coefficient of correlation from the following data:

X	100	101	102	102	100	99	97	98	96	95
Y	98	9	99	97	95	92	95	94	90	91

2. Find the equations of regression line Y on X from the following data. Also find Y when $X = 45$.

X	28	41	40	38	35	33	46	32	36	33
Y	30	34	31	34	30	26	28	31	26	31

3. The following table gives the information regarding life hours of 5 fluorescent lamps of 10 different samples. Draw $\bar{X}$ *and* R charts and state your conclusions. Also give the revised limits for the control of the future production.

Sample number	1	2	3	4	5	6	7	8	9	10
$\bar{X}$	3290	3180	3350	3370	3280	3240	3260	3410	3310	3510
R	360	210	50	100	50	400	500	200	300	600

[For n=5, A_2=0.58, D_3=0, D_4=2.11]

4. Assume that a factory has two machines. Past records show that machine A produces 305 of the items of output and machine B produces 705 of the items. Further, 5% of the items produced by machine A were defective and only 1% produced by machine B were defective. If a defective item is drawn at random, what is the probability that the defective item was produced by machine A or machine B?