

B.B.A. Semester - 3 (CBCS) Examination
Oct/Nov. -2019 [NEW COURSE]
Business Statistics (Allied)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1 (a) Define the following. (05)

- (i) Random experiment
- (ii) Mathematical definition of probability
- (iii) Independent events
- (iv) Conditional probability
- (v) Compliment events

(b) A, B, C are mutually exclusive and exhaustive events. If $2P(A) = P(B)$ and $P(C) = 2/5$ find $P(B \cup C)$ (05)

(c) A man can hit the target 3 out of 4 trials, another man can hit the target 2 out of 3 trials. If they hit simultaneously, what is the probability that the target will be hit? (04)

OR

Que-1 (a) Write additional theorem of two events and prove it. (05)

(b) There are 3 red and 2 white flowers in a basket. Two flowers are taken one by one without replacement. Find the probability of white flower in second draw; given that in first draw red flower has been turned out. (05)

(c) If $2P(A) = 3P(B) = 5P(A \cap B) = \frac{1}{2}$. find $P(A \cup B)$ and $P(B/A)$ (04)

Que-2 (a) Define (05)

- (i) Probability distribution of random variable
- (ii) Expected value of X
- (iii) Variance of random variable of X

(b) Mr. X plays a game of tossing die. If the number less than 3 appears, he is getting Rs.a, otherwise he has to pay Rs.10. if the game is fair, find a. (05)

(c) For the following probability distribution show that $E(1/X)$ and $1/E(X)$ are not same (04)

X	1	5	10
P(x)	0.3	0.5	0.2

OR

Que-2 (a) Write properties of normal distribution. (05)

(b) The average life of a battery is 400 hours and its S.D. is 50 hours. Assuming normal distribution, find (05)

- (i) The percentage of batteries having life more than 350 hours.
- (ii) After how many hours 25% of the batteries will still working.

(c) For a normal distribution with mean 50 and s.d. 15 Find Q1 and Q3 Quartile deviation and Mean deviation. (04)

Que-3 (a) Write properties of binomial distribution. (05)

(b) 6 persons are of the same age and health. The probability that each person will live for 40 years is $\frac{3}{4}$. Find the probability that in 40 years. (05)

- (i) No one had died
- (ii) At least 2 are died

(c) For a Binomial variate $n = 8$ and $16 P(X = 2) = P(X = 6)$ Find probability of success. (04)

OR

Que-3 (a) Write properties of poisson distribution. (05)

(b) A person has two taxis to hire. The distribution of demand for taxis is poisson. The average demand of taxi per day is 1.5 Out of 100 days in how many days (05)

- (i) There will no demand
- (ii) He will not meet the demand?

- (c) For a poisson variate X, if $P(1) = P(2)$ then find $P(3)$ (04)
- Que-4 (a) Write properties of correlation coefficient (05)
- (b) In two sets of variables X and Y with 50 observations each the following data were observed (09)
 Mean of X = 10, Mean of Y = 6, S.D. x = 3 S. D. y = 2, $r = 0.3$ However it was later on found that one pair (10, 6) were inaccurate and hence weeded out. With the remaining pairs of values how is the correlation coefficient affected?

OR

- Que-4 (a) Explain types of correlation coefficient. (05)
- (b) Find correlation coefficient between age and successful candidates in the examination from the following data (09)

Age of candidates	Candidates appeared	Successful candidates
12-13	200	124
13-14	300	180
14-15	100	65
15-16	50	34
16-17	150	99
17-18	400	252
18-19	250	145
19-20	150	81
20-21	25	12
21-22	75	33

- Que-5 (a) What is regression? Why there are two lines of regression? (05)
- (b) Obtain two lines of regression from the following data. (09)

X	12	15	15	23	24	38	42	48
Y	5	5.6	5.8	7	7.2	8.8	9.2	9.5

OR

- Que-5 Following are the data of students according to their heights and weights. (14)
 Find (i) The correlation coefficient (ii) obtain two regression lines.

Heights in inches	Weight in lbs.			
	90-100	100-110	110-120	120-130
50-55	4	7	5	2
55-60	6	10	7	4
60-65	6	12	10	7
65-70	3	8	6	3
