Total No. of Questions : 4]

## **PA-1834**

SEAT No. :

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# T.Y. B.Com. (Semester - V) STATISTICS 355 (F) : Business Statistics - II (2019 Pattern) (CBCS)

#### *Time* : 2<sup>1</sup>/<sub>2</sub> *Hours*]

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Use of statistical tables & calculator is allowed.

## **Q1**) Attempt the following :

- A) Choose the correct alternative of the following (any five):  $[5 \times 1 = 5]$ 
  - i) The number of ways in which 5 women & 3 men are to be seated at a round table so that no two men are to sit together is :
    - a) 1460 ways
      b) 1440 ways
      c) 1420 ways
      d) 1410 ways
  - ii) Let X~ Binomial (n, p) then mean of X is
    - a) n b) np c) npq d) pq
  - iii) Economic Order Quantity is the tool for controlling \_\_\_\_\_
    - a) Inventory b) Labor
    - c) Expenses d) None
    - iv) In how many ways 2 students can be chosen from the class of 20 students?
      - a) 190 b) 180
      - c) 240 d) 390

[Max. Marks : 50

	v)	If m is the mean of poisson distribution then variance is given by						
		a) m <sup>2</sup>	b)	m				
		c) m/2	d)	m <sup>1/2</sup>				
	vi)	How many outcomes can a Bernoulli trials have?						
		a) 3	b)	2				
		c) 5	d)	2 <sup>n</sup>				
	vii)	An event in the probability that will never be happen is called as						
		a) Unsure event	b)	Sure event				
		c) Possible even	t d)	Impossible event				
B)	Stat	te whether the following statements are TRUE or FALSE : $[5 \times 1 = 5]$						
	i)	Probability is always lies between 0 & 1.						
	ii)	Poisson variable has countably infinite values.						
	iii)	$p(\phi) = 0$						
	iv)	Marginal probability of x is a univariate probability distribution.						
	v)	Under certain situations, binomial distribution can be approximated						
		by poisson distribution.						
( <b>0</b> ) Wri	to she	ort note (any two) :		$[2 \times 5 - 10]$				
( $2 \times 5 = 10$ ] ( $2 \times 5 = 10$ ]								
R)	Inve	entory control						
D)	Pois	Poisson distribution						
	Ran	Random variable						
(23) A) a) A discrete random variable x has the following probability distribution [4]								
		<i>x</i> 0 1	2	4				
	$p(\Sigma$	K = x) 4/10 k	2/10	2/10				
	Fine	1:						

x	0	1	2	4
$p(\mathbf{X} = x)$	4/10	k	2/10	2/10
Find ·				

i) k

ii) variance (x)

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b) The probability of defective bolt is 0.1 let x denotes the number of detective bolts in a box of 20 bolts. Find the probability that the defective bolts will be

[4]

- i) at least two
- ii) at most three
- B) a) Explain:
  - i) Event
  - ii) Complementary Event
  - iii) Independence of two descrete random variables
  - iv) Conditional probability of event A for given event B.
  - b) If A & B are any two events with P(A / B) = 0.8 & P(B) = 0.5. Find  $P(A \cap B)$ . [3]
- (Q4) A) a) A dealer supplies the following information with respect to a product. [4]

Annual Demand - 1000

Ordering Cost - 10 Rs. per order

Price per unit - 20 Rs.

Inventory carrying cost - 20%

Back-order cost - 25%

Determine :

- i) EOQ
- ii) Optimal number of orders
- 2 3 5 4 6 1 Y Х 0 0 0 2/322/32 1/323/32 1 1/16 1/16 1/81/81/8 1/82 1/32 1/321/64 1/64 0 2/64
- b) For the following bivariate probability distribution of X & Y: [4]

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Find :

- i)  $P(X \le 1, Y = 2)$
- ii)  $P(X \le 1)$
- iii) P(Y = 3)
- iv)  $P(Y \le 3)$
- B) a) A bag contain 10 balls, two of which are red, three blue & five black, three balls are drawn at random from the bag. What is the probability that : [4]
  - i) The three balls are different colours.
  - ii) Exactly two balls of the same colours.

b) If poisson distribution probabilities are p(x = 1) = 2 p(x = 2). Find mean & variance. [3]