G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY

SET-1

Accredited by NAAC with "A" Grade, Recognized by UGC under 2(f) & 12(B)

(Affiliated to JNTUA & Approved by AICTE)

B. Tech II Year II Semester (R15) MID-I Descriptive Examinations

PROBABILITY & STATISTICS (15A54401)

Branch: CSE,CE, ME.

Time: 90 minutes DATE: 28/02/2019

Max.Marks:30

PART-A (5 X 2 = 10M)

ANSWER ALL QUESTIONS.EACH QUESTION CARRY EQUAL MARKS:

1

a. If A and B are any two arbitrary events then prove that P (AUB) = P(A) + P(B) –P(A∩B)
b. Determine the binomial distribution for which the mean is 4 and variance is 3.
c. Three students A, B, C are in a running race. A and B have the same probability of winning and each is twice as likely to win as C. Find the probability that B or C wins.
d. Define Null hypothesis & Alternative hypothesis.
e. Write about one tailed test.

Marks	Unit	CO	Cognitive Level
2	I	C209.1	Apply
2	I	C209.1	Apply
2	I	C209.1	Apply
2	II	C209.2	Remember
2	II	C209.2	Remember

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5

2. A Random variable X has the following Probability function:

X	0	1	2	3	4	5	6	7
P(X)	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2+k$

Determine (i) K (ii) evaluate P(X<6) (iii) if P(X≤k)>1/2 (iv) Mean (v)Variance (vi) Standard Deviation.

Marks	Unit	CO	Cognitive Level
10	I	C209.1	Apply

(OR)

3. A) Find the mean and standard deviation of a normal distribution in which 7% of items are under 35 and 89% are Under 63.

B) In a bolt factory, A, B & C manufacture 20%, 30% and 50% of the total. Of their output 6%,3% and 2% are defective bolts. A bolt is drawn at random from the product and is found to be Defective. What are the probabilities that it was manufactured by machines A, B, or C ?

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Apply
5	I	C209.1	Apply

4. A) Explain the Procedure generally followed in "testing of hypothesis"

B) In a big city 325 men out of 600 men were found to be Smokers does this information support the conclusion that the majority of men in this are smokers.

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Apply
5	I	C209.1	Apply

(OR)

5)A) In a random sample of 125 cool drinks ,68 are said they prefer thumps up to pepsi. Test the null hypothesis at P=0.5against the alternative hypothesis P>0.5

B)Among 900 People in a state 90 are found to be wheat eaters. Construct a 99% of Confidence interval for the true proportion.

Marks	Unit	CO	Cognitive Level
5	II	C209.2	Analyze
5	II	C209.2	Create

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d. Define Null hypothesis & Alternative hypothesis.
e. Write about one tailed test.

Marks	Unit	CO	Cognitive Level
2	I	C209.1	Apply
2	I	C209.1	Apply
2	I	C209.1	Apply
2	II	C209.2	Remember
2	II	C209.2	Remember

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5

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X	0	1	2	3	4	5	6	7
P(X)	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2+k$

Determine (i) K (ii) evaluate P(X<6) (iii) if P(X≤k)>1/2 (iv) Mean (v)Variance (vi) Standard Deviation.

Marks	Unit	CO	Cognitive Level
10	I	C209.1	Apply

(OR)

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B) In a bolt factory, A, B & C manufacture 20%, 30% and 50% of the total. Of their output 6%,3% and 2% are defective bolts. A bolt is drawn at random from the product and is found to be Defective. What are the probabilities that it was manufactured by machines A, B, or C ?

Marks	Unit	CO	Cognitive Level
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5	I	C209.1	Apply

4. A) Explain the Procedure generally followed in "testing of hypothesis"

B) In a big city 325 men out of 600 men were found to be Smokers does this information support the conclusion that the majority of men in this are smokers.

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Apply
5	I	C209.1	Apply

(OR)

5)A) In a random sample of 125 cool drinks ,68 are said they prefer thumps up to pepsi. Test the null hypothesis at P=0.5against the alternative hypothesis P>0.5

B)Among 900 People in a state 90 are found to be wheat eaters. Construct a 99% of Confidence interval for the true proportion.

Marks	Unit	CO	Cognitive Level
5	II	C209.2	Analyze
5	II	C209.2	Create

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SET-2

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B. Tech II Year II Semester (R15) MID-I Descriptive Examinations

PROBABILITY & STATISTICS (15A54401)

Branch :CSE ,CE,ME.

Time: 90 minutes DATE: 28/02/2019

Max.Marks:30

PART-A (**5 X 2 = 10M)**

ANSWER ALL QUESTIONS.EACH QUESTION CARRY EQUAL MARKS:

	Marks	Unit	CO	Cognitive Level
1 (a) If A, B,C are any three arbitrary events then prove that P(AUBUC) = P(A) + P(B) +P(C) −P(A∩ B) – P(B∩C)−P(C∩A)+ P(A∩B∩C).	2	I	C209.1	Apply
(b) The mean of Binomial distribution is 3 and the variance is $\frac{9}{4}$. Find the value of n	2	I	C209.1	Apply
(c) If A and B are two events such that P(A)=1/3, P(B)=3/4 and P(A∩ B)=1/2 . Find (i) P(AUB), (ii)P(A/B) (iii)P(B/A)	**2**	I	C209.1	Remember
(d) Define Null hypothesis	2	II	C209.2	Remember
(e) Write about two tailed test.	2	II	C209.2	Remember

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5

	Marks	Unit	CO	Cognitive Level
2. For the continuous probability function f(x) = $\mathbf{kx^2e^{-x}}$ **when** x ≥ 0 find (i) k (ii) Mean (iii)Variance	5	I	C209.1	Create

(OR)

	Marks	Unit	CO	Cognitive Level
3. A) Find the Mean and Variance of the uniform probability Distribution given by f(x)= 1/n for x=1,2,3,.....n. B) Average number of accidents on any day on a national highway is 1.8. Determine the probability that the number of accidents a i.At least one	5	I	C209.1	Understand
ii. At most one	5	I	C209.1	Apply

4) In a sample of 1000 people in Karnataka state 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in the state at 1% of level of significance

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Create

(OR)

5. A die was thrown 9000 times and of these 3220 yielded a 3 or 4 is this consistent with the hypothesis that the dice was unbiased

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Create

SET-2

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PROBABILITY & STATISTICS (15A54401)

Branch :CSE ,CE,ME.

Time: 90 minutes DATE: 28/02/2019

Max.Marks:30

PART-A (**5 X 2 = 10M)**

ANSWER ALL QUESTIONS.EACH QUESTION CARRY EQUAL MARKS:

1

(a) If A, B,C are any three arbitrary events then prove that P(AUBUC) = P(A) + P(B) +P(C) −P(A∩ B) – P(B∩C)−P(C∩A)+ P(A∩B∩C).

(b) The mean of Binomial distribution is 3 and the variance is $\frac{9}{4}$. Find the value of n

(c) If A and B are two events such that P(A)=1/3, P(B)=3/4 and P(A∩ B)=1/2 .
Find (i) P(AUB), (ii)P(A/B) (iii)P(B/A)

(d) Define Null hypothesis

(e) Write about two tailed test.

Marks	Unit	CO	Cognitive Level
2	I	C209.1	Apply
2	I	C209.1	Apply
2	I	C209.1	Remember
2	II	C209.2	Remember
2	II	C209.2	Remember

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5

2. For the continuous probability function f(x) = $\mathbf{kx^2e^{-x}}$ **when** x ≥ 0 find
(i) k
(ii) Mean
(iii)Variance

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Create

(OR)

3. A) Find the Mean and Variance of the uniform probability Distribution given by f(x)= 1/n for x=1,2,3,.....n.

B) Average number of accidents on any day on a national highway is 1.8. Determine the probability that the number of accidents a
i.At least one
ii. At most one

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Understand
5	I	C209.1	Apply

4) In a sample of 1000 people in Karnataka state 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in the state at 1% of level of significance

(OR)

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Create

5. A die was thrown 9000 times and of these 3220 yielded a 3 or 4 is this consistent with the hypothesis that the dice was unbiased

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Create

SET-3

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PROBABILITY & STATISTICS (15A54401)

Branch:CSE,CE,ME.

Time: 90 minutes DATE: 28/02/2019

Max.Marks:30

PART-A (5 X 2 = 10M)

ANSWER ALL QUESTIONS.EACH QUESTION CARRY EQUAL MARKS:

	Marks	Unit	CO	Cognitive Level
a. Write the statement of Baye's Theorem	2	I	C209.1	Remember
b. Given that f(x) = k/2x for x=0,1,2,3,4 and find (i) K value.	2	I	C209.1	Apply
c. If X is a Poisson variate such that $P(x=0)=P(x=1)$ then find λ.	2	I	C209.1	Apply
d. Define level of significance.	2	II	C209.2	Remember
e.Find the value of the finite population correction factor for $n=10\ and\ \ N=100$	2	II	C209.2	Apply

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5:

2 A bag A contains 2 white and 3 red balls and a bag B contains 4 white and 5 red balls. One ball is drawn at random from one of the bags and it is found to be red. Find the probabilities that the red ball drawn is from bag B.

Marks	Unit	CO	Cognitive Level
10	I	C209.1	Analyze

(**OR**)

3) A) Suppose 5 men out of 100 and 25 women out of 10,000 are colour blind. A colour blind person is chosen at random. What is the probability of the person being a male (Assume male and female to be in equal numbers).

B) If X is a normal variate with mean 30 and standard deviation 5 Find the probabilities that $(i)26 \le x \le 40\ \ (ii)\ X \ge 45$

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Apply
5	I	C209.1	Apply

4) In a sample of 1000 people in Karnataka 540 are rice eaters, and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance?

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Apply

(OR)

5) A)A random sample of 500 pineapples was taken from a large Consignment and 65 were found to be bad .Find the confidence limits of bad pineapples in the consignment

B) Among 900 people in a state 90 are found to be wheat eater's . Construct a 99% Confidence interval for the true

Marks	Unit	CO	Cognitive Level
5	II	C209.2	Understand
5	II	C209.2	Apply

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	Marks	Unit	CO	Cognitive Level
a. Write the statement of Baye's Theorem	2	I	C209.1	Remember
b. Given that f(x) = k/2x for x=0,1,2,3,4 and find (i) K value.	2	I	C209.1	Apply
c. If X is a Poisson variate such that $P(x=0)=P(x=1)$ then find λ.	2	I	C209.1	Apply
d. Define level of significance.	2	II	C209.2	Remember
e.Find the value of the finite population correction factor for $n=10\ and\ \ N=100$	2	II	C209.2	Apply

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5:

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Marks	Unit	CO	Cognitive Level
10	I	C209.1	Analyze

(**OR**)

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B) If X is a normal variate with mean 30 and standard deviation 5 Find the probabilities that $(i)26\le x\le 40\ \ (ii)\ X\ge 45$

Marks	Unit	CO	Cognitive Level
5	I	C209.1	Apply
5	I	C209.1	Apply

4) In a sample of 1000 people in Karnataka 540 are rice eaters, and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance?

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Apply

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Marks	Unit	CO	Cognitive Level
5	II	C209.2	Understand
5	II	C209.2	Apply

SET-4

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PROBABILITY & STATISTICS (15A54401)

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Max.Marks:30

PART-A (5 X 2 = 10M)

ANSWER ALL QUESTIONS.EACH QUESTION CARRY EQUAL MARKS:

1

a. Define sample space, mutually exclusive events

b. Find the probability of getting a sum of 10 if we throw two dice.

c. If a random variable X has a Poisson distribution such that $P(1) = P(2)$, find $a)$ mean of distribution $b)$find $P(x \geq 1)$

d. Find the value of the finite population correction factor for $n = 10\ and\ \ N = 100$

e. Write about two tailed test?

Marks	Unit	CO	Cognitive Level
2	I	C209.1	Remember
2	I	C209.1	Analyze
2	I	C209.1	Apply
2	II	C209.2	Apply
2	II	C209.2	Remember

PART-B(2 X 10=20M)

ANSWER ONE FROM 2 (OR) 3 AND ONE FROM 4 (OR) 5:

2) A Random variable X has the following Probability function:

X	0	1	2	3	4	5	6	7
P(X)	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2 + k$

Marks	Unit	CO	Cognitive Level
10	I	C209.1	Apply

Determine (i) K (ii) evaluate P(X<6) (iii) if P(X≤k)>1/2 (iv) Mean (v)Variance (vi) Standard Deviation.

(OR)

3) A random variable X has the following probability distribution

X	1	2	3	4	5	6	7	8
P(X)	K	2K	3K	4K	5k	6k	7k	8k

Marks	Unit	CO	Cognitive Level
10	I	C209.1	Apply

Find the value of i) k ii) P(X≤2) iii) P(2≤X≤5)

4) A) Define Type –I error.

B) A Dice is thrown 256 times & it turns up an even digit of 150 times. The dice is a biased.

Marks	Unit	CO	Cognitive Level
10	II	C209.2	Apply

(OR)

5)A) In a random sample of 125 cool drinks ,68 are said they prefer thumps up to pepsi. Test the null hypothesis at P=0.5against the alternative hypothesis P>0.5

B) Among 900 People in a state 90 are found to be wheat eaters. Construct a 99% of Confidence interval for the true proportion.

Marks	Unit	CO	Cognitive Level
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2	I	C209.1	Analyze
2	I	C209.1	Apply
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2) A Random variable X has the following Probability function:

X	0	1	2	3	4	5	6	7
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(OR)

3) A random variable X has the following probability distribution

X	1	2	3	4	5	6	7	8
P(X)	K	2K	3K	4K	5k	6k	7k	8k

Marks	Unit	CO	Cognitive Level
10	I	C209.1	Apply

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5	II	C209.2	Understand