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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. III Year I Semester Regular & Supplementary Examinations Nov/Dec 2019**Probability and Statistics****(Common to all)**

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1		There are two boxes, in box I, 11 cards are there numbered 1 to 11 and in box II, 5 cards are there numbered 1 to 5. A box is chosen and a card is drawn. If the card shows an even number then another card is drawn from the same box. If card shows an odd number another card is drawn from the other box. Find the probability that (i) both are even (ii) both are odd (iii) if both are even what is the probability that they are from box I?	10 M
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OR

2		Two dice are thrown X assign to each point if S is the sum of the variable on the faces. Find mean and variance of the random variable.	10 M
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UNIT-II

3	a	Fit a Binomial distribution to the following frequency distribution:	8 M																
		<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">3</td> <td style="padding: 2px;">4</td> <td style="padding: 2px;">5</td> <td style="padding: 2px;">6</td> </tr> <tr> <td style="padding: 2px;">f</td> <td style="padding: 2px;">13</td> <td style="padding: 2px;">25</td> <td style="padding: 2px;">52</td> <td style="padding: 2px;">58</td> <td style="padding: 2px;">32</td> <td style="padding: 2px;">16</td> <td style="padding: 2px;">4</td> </tr> </table>	x	0	1	2	3	4	5	6	f	13	25	52	58	32	16	4	
x	0	1	2	3	4	5	6												
f	13	25	52	58	32	16	4												
		b	2 M																
		The mean and variance of a binomial distribution are 4 and $\frac{4}{3}$. Find $p(X \geq 1)$.																	

OR

4		When the mean of marks was 50% and S.D. 5% then 60% of the students failed in an examination? Determine the grace marks to be awarded in order to show that 70% of the students passed. Assume that the marks are normally distributed.	10 M
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UNIT-III

5		Explain briefly the procedure for testing of Hypothesis.	10 M
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OR

6		The measurements of the output of two units have given the following results. Assuming that both samples have been obtained from the normal populations at 10% significant level, test whether the two populations have the same variance.	10 M												
		<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Unit A</td> <td style="padding: 2px;">14.1</td> <td style="padding: 2px;">10.1</td> <td style="padding: 2px;">14.7</td> <td style="padding: 2px;">13.7</td> <td style="padding: 2px;">14.0</td> </tr> <tr> <td style="padding: 2px;">Unit B</td> <td style="padding: 2px;">14.0</td> <td style="padding: 2px;">14.5</td> <td style="padding: 2px;">13.7</td> <td style="padding: 2px;">12.7</td> <td style="padding: 2px;">14.1</td> </tr> </table>	Unit A	14.1	10.1	14.7	13.7	14.0	Unit B	14.0	14.5	13.7	12.7	14.1	
Unit A	14.1	10.1	14.7	13.7	14.0										
Unit B	14.0	14.5	13.7	12.7	14.1										

UNIT-IV

7		Set up an analysis of variance table for the following per acre production data for three varieties of wheat, each grown on 4 plots and state if the variety differences are significant.	10 M
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			<table border="1"> <tr> <td rowspan="3">Plot of land</td> <td colspan="3">Per acre production data</td> </tr> <tr> <td colspan="3">Variety of Wheat</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> </tr> <tr> <td>1</td> <td>6</td> <td>5</td> <td>5</td> </tr> <tr> <td>2</td> <td>7</td> <td>5</td> <td>4</td> </tr> <tr> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td>4</td> <td>8</td> <td>7</td> <td>4</td> </tr> </table>			Plot of land	Per acre production data			Variety of Wheat			A	B	C	1	6	5	5	2	7	5	4	3	3	3	3	4	8	7	4															
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8	Define a Latin Square Design (L.S.D.). Explain briefly advantages and disadvantages of L.S.D. Also, explain the comparisons of R.B.D. and L.S.D.			10 M																																										
UNIT-V																																														
9	<p>The following are the figures give the number of defectives in 20 samples, containing 2000 items. 425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 326, 280, 389.</p> <p>Draw control chart for fraction defective and comment on the state of control of the Process.</p>			10 M																																										
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10	<p>The number of defects on 20 items are given below:</p> <table border="1"> <tr> <td>Item No.</td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td> </tr> <tr> <td>No. of Defects</td> <td>2</td><td>0</td><td>4</td><td>1</td><td>0</td><td>8</td><td>0</td><td>1</td><td>2</td><td>0</td><td>6</td><td>0</td><td>2</td><td>1</td><td>0</td><td>3</td><td>2</td><td>1</td><td>0</td><td>2</td> </tr> </table> <p>Devise a suitable control scheme for the future.</p>			Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	No. of Defects	2	0	4	1	0	8	0	1	2	0	6	0	2	1	0	3	2	1	0	2	10 M
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