

STATISTICS FOR COMPUTER SCIENCE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The value of correlation ratio varies from: (i) -1 to 1 (ii) -1 to 0 (iii) 0 to 1 (iv) 0 to 2	K1	CO1
	2	If one regression coefficient of the two regression lines is greater than unity, the other will be: (i) greater than 1 (ii) less than 1 (iii) 1 (iv) 1/2	K2	CO1
2	3	The probability of all possible outcomes of a random experiment is always equal to: (i) infinity (ii) zero (iii) one (iv) more than 1	K1	CO2
	4	In tossing three coins at a time, the probability of getting at most one head is: (i) 3/8 (ii) 7/8 (iii) 1/2 (iv) 1/8	K2	CO2
3	5	Two random variables X and Y are said to be independent if: (i) $E(XY) = 1$ (ii) $E(XY) = 0$ (iii) $E(XY) = E(X)E(Y)$ (iv) $E(XY) = \text{any constant value}$	K1	CO3
	6	If for a binomial distribution, $b(n, p)$, $n=4$ and also $P(X=2)=3P(X=3)$, the value of p is: (i) 9/11 (ii) 1 (iii) 1/3 (iv) 11/9	K2	CO3
4	7	The mean difference between 9 paired observations is 15.0 and the standard deviation of difference is 5.0. The value of statistic t is: (i) 27 (ii) 9 (iii) 3 (iv) 0	K1	CO4
	8	If it is expected that 50 percent people of a city are cinema goers. A survey of 1600 people revealed that 35 percent people go to cinema. The value of statistic – Z is: (i) 13.0 (ii) 6.0 (iii) 12.58 (iv) -12.0	K2	CO4
5	9	Degrees of freedom for chi-square in case of contingency table of order (4×3) are: (i) 12 (ii) 9 (iii) 8 (iv) 6	K1	CO5
	10	Analysis of variance utilizes: (i) F -test (ii) Chi-square test (iii) Z -test (iv) t -test	K2	CO5

SECTION B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO																		
1	11.a.	Compute Karl Pearson's correction coefficient for the data given below:	K5	CO1																		
		<table><tr><td>X</td><td>32</td><td>35</td><td>31</td><td>38</td><td>27</td><td>42</td><td>57</td><td>21</td></tr><tr><td>Y</td><td>52</td><td>67</td><td>53</td><td>47</td><td>41</td><td>55</td><td>63</td><td>72</td></tr></table>			X	32	35	31	38	27	42	57	21	Y	52	67	53	47	41	55	63	72
		X			32	35	31	38	27	42	57	21										
	Y	52	67		53	47	41	55	63	72												
	(OR)																					
11.b.	Calculate Spearman's rank correlation coefficient for the following data:	K6																				
	<table><tr><td>Marks in CS</td><td>97</td><td>51</td><td>68</td><td>75</td><td>42</td><td>33</td></tr><tr><td>Marks in Stat.</td><td>15</td><td>53</td><td>47</td><td>28</td><td>64</td><td>82</td></tr></table>		Marks in CS	97	51	68	75	42	33	Marks in Stat.	15	53	47	28	64	82						
Marks in CS	97	51	68	75	42	33																
Marks in Stat.	15	53	47	28	64	82																
2	12.a.	From a bag containing 3 white and 5 rad balls of identical size, two balls are drawn at random one after another. Find the probability of getting white balls in both the draws if the draws are (i) without replacement and (ii) with replacement.	K5	CO2																		
		(OR)	K6																			

Cont...

	12.b.	random. Find the probability that both of them are black.		
3	13.a.	Define Binomial distribution. The mean and variance of Binomial distribution are 4 and $\frac{4}{3}$ respectively. Find $P(X>1)$.	K5	CO3
		(OR)		
	13.b.	Write the properties of normal distribution.	K2	
4	14.a.	A sample of 900 members has a mean 3.4 cms and standard deviation 2.61 cms. Is the sample from a large population of a mean 3.25 cms. and standard deviation 2.61 cms?	K3	CO4
		(OR)		
	14.b.	A certain stimulus administered to each of the 12 patients resulted in the following increase blood pressure: 5, 2, 8, -1, 3, 0, -2, 1, 5, 0, 4 and 6. Can it be concluded that stimulus will, in general, be accompanied by an increase of blood pressure?	K2	
5	15.a.	Can vaccination be regarded as prevention measure of small-pox as evidenced by the following data? "Of 1482 persons exposed to small-pox in a locality 368 in all were attacked. Of these 1482 persons, 343 were vaccinated and these only 35 were attacked". Using chi-square test at 5% level of significance.	K5	CO5
		(OR)		
	15.b.	Explain analysis of variance and its assumptions.	K2	

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO																																
1	16	Calculate the two regression equations from the following data. <table><tr><td>X</td><td>10</td><td>12</td><td>13</td><td>12</td><td>16</td><td>15</td></tr><tr><td>Y</td><td>40</td><td>38</td><td>43</td><td>45</td><td>37</td><td>43</td></tr></table>	X	10	12	13	12	16	15	Y	40	38	43	45	37	43	K6	CO5																		
X	10	12	13	12	16	15																														
Y	40	38	43	45	37	43																														
2	17	Machines I, II, III and IV account for 30%, 25%, 35% and 10% of total production. These machines produce 95%, 90%, 85% and 98% non-defective items. If a randomly selected item is found to be non-defective, find the probability that it was produced by machine IV.	K6	CO4																																
3	18	A manufacturer, who produces medicine bottles, find that 0.1% of the bottles are defective. The bottles are packed in boxes, each having 500 bottles. A drug manufacturer buys 100 boxes from the product of bottles. Using Poisson distribution, find how many boxes will contain (i) no defective and (ii) at least two defectives.	K6	CO4																																
4	19	Below are given the gain in weights (in kgs.) of pigs fed on two diets A and B. <table><tr><td>Diet A</td><td>25</td><td>32</td><td>30</td><td>34</td><td>24</td><td>14</td><td>32</td><td>24</td><td>30</td><td>31</td><td>35</td><td>25</td><td>-</td><td>-</td><td>-</td></tr><tr><td>Diet B</td><td>44</td><td>34</td><td>22</td><td>10</td><td>47</td><td>31</td><td>40</td><td>30</td><td>32</td><td>35</td><td>18</td><td>21</td><td>35</td><td>29</td><td>22</td></tr></table> Test, if the two diets differ significantly as regards their effect on increase in weight.	Diet A	25	32	30	34	24	14	32	24	30	31	35	25	-	-	-	Diet B	44	34	22	10	47	31	40	30	32	35	18	21	35	29	22	K5	CO3
Diet A	25	32	30	34	24	14	32	24	30	31	35	25	-	-	-																					
Diet B	44	34	22	10	47	31	40	30	32	35	18	21	35	29	22																					
5	20	The following table gives the yields of 15 samples of plot under three varieties of seed. <table><tr><td>A</td><td>B</td><td>C</td></tr><tr><td>20</td><td>18</td><td>25</td></tr><tr><td>21</td><td>20</td><td>28</td></tr><tr><td>23</td><td>17</td><td>22</td></tr><tr><td>16</td><td>15</td><td>28</td></tr><tr><td>20</td><td>25</td><td>32</td></tr></table> Test using analysis of variance whether there is a significant difference in average yield of seeds.	A	B	C	20	18	25	21	20	28	23	17	22	16	15	28	20	25	32	K5	CO3														
A	B	C																																		
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23	17	22																																		
16	15	28																																		
20	25	32																																		

Z-Z-Z

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