APJ ABDULKALAM TECHNOLOGICAL UNIVERSIT 08 PALAKKAD CLUSTER

Q. P. Code : TA1182

(Pages: 3)

Name:

Reg. No:....

Max.marks: 60

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2018

Branch: Civil Engineering

Specialization: Transportation Engineering

08MA6201 APPLIED STATISTICS AND PROBABILITY

Time:3 hours

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.				NIOD	ule 1				Marks
1.a	Show tha	t Poisson	distributio	n is a limi	ting case o	of Binomia	al distributi	on	3
			~	Answe	r b or c				
b	In a norn 70. Find 1	nal distribution nean and	ution 33% variance o	o of observ	vations are	below 45 tion	and 5% and	re above	6
c	Fit a norm	nal distrib	ution for t	he followi	ng data				6
		Х	0	1	2	3	4		
	1940 j.	P(X)	10	15	35	30	10		
		9							
Q.no.		Module 2					Marks		
2.a	Suggest an	n unbiased	l estimator	r for σ if X	K follows n	ormal dist	ribution.		3
					- <u>-</u>		-		

Answer b or c

- b A sample of 1000 members has a mean 3.4 cm and s.d 2.61 cm. Is the sample
 6 from a large population of mean 3.25 cm and s.d 2.61 cm.
- c In one sample of 8 observations the sum of deviations of sample values from the sample mean was 84.4 and in the other sample of 10 observation it was 102.6. Test whether this difference is significant at 1% level.

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Module 3

Q.no.

3.a Explain partial and multiple correlation coefficients

Answer b or c

b Fit a second degree equation to the following data by the method of least squares and also find the value of x=6.

X	1	2	3	4	5	
F	-5	12	36	66	97	

c In a partially destroyed laboratory records of an analysis of correlation data only following results only legible:

Variance of x = 9, Regression equations 8x-10y+66=0,

40x-18y=214. What are

- i. the mean values of x and y
- ii. the correlation coefficient between x and y
- standard deviation of y iii.

Q.no.

Module 4

Explain basic principles of experimental design 4.a

Answer b or c

Three varieties of a crop are tested in a randomized block design with four b replications, the layout being as given below. The yields are given in kilograms. Analyse for significance.

C48	A51	B52	A49
A47	B49	C52	C51
B49	C53	A49	B50

c Analyse the variance in the following Latin square of yield (in kgs) of paddy 6 where A,B,C,D denote different methods of cultivation:

D122	A121	C123	B122
B124	C123	A122	D125
A120	B119	D120	C121
C122	D123	B121	A122

Examine whether the different methods of cultivations have given significantly different yields.

Marks

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6

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Marks 3

6

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2.110.			Module 5			Ma
5.a	Explain the com	ponents of tim	e series			
			Answer b or	· c		•
b	Explain ARIMA	models				1
c	Calculate the se method	ssional indices	from the follo	owing data using	ng moving averag	ge i
	Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
		- 70	69	80	70	2
	1992	12	00	00	10	
	1992 1993	72	70	80	70	
	1992 1993 1994	72 76 74	70 66	80 82 84	70 74 80	
	1992 1993 1994 1995	72 76 74 76	70 66 74	80 82 84 84	70 74 80 78	

Marks 6.a Define bivariate normal distribution. 4 Answer b or c **b** Explain the principle components 8 **c** Let $f(x,y) = 6y \quad 0 < y < x < 1$. 8 Find F(x,y),f(x),g(y),f(x/y)

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Q.no.

Module 6