APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

08 PALAKKAD CLUSTER

Q. P. code : TA1172 **(pages: 2)** **Name:**

Reg No:

FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017
CIVIL (Transportation Engineering)

08MA6201 APPLIED STATISTICS AND PROBABILITY

Time :3 hours **Max.Marks : 60**

Answer ALL six questions. Part (a) of each question is compulsory.

Answer EITHER part (b) *or* part (c) of each question.

Q.No. **Marks**

Module 1

1a. Explain lack of memory property of exponential distribution **3**

Answer b *or* c

b. In a normal distribution 33%of observations are below 45 and 5% are above 70 .Find maen and varience of the normal distribution **6**

c. Fit a binomial distribution for the following data.

X	0	1	2	3	4
P(X)	10	15	35	30	10

6

Module 2

2a. Explain desired properties of a good estimator **3**

Answer b *or* c

b. A sample of 900 members has a mean3.4 cms and s.d 2.61cms. Is the sample from a large population of mean 3.25 cms and s.d 2.61 cms **6**

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 5% level. **6**

Module 3

3a. Explain partial and multiple correlation coefficients **3**

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

6

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 iii) standard deviation of y

6

Module 4

4a. Explain basic principles of experimental design **3**

Answer b *or* c

b. Three varieties of a crop are tested in a randomized block design with four 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

6

c. Analyse the variance in the following Latin square of yield (in kgs) of paddy 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.

6

Module 5

5a. Explain the components of time series **4**

Answer b *or* c

b.Explain ARIMA models **8**

c.Calculate the sessional indices from the following data using average method

Year	1st Quater	2nd Quater	3rd Quarter	4th Quater
1992	72	68	80	70
1993	76	70	82	74
1994	74	66	84	80
1995	76	74	84	78
1996	78	74	86	82

8

Module 6

6a. Define multi variate normal distribution. **4**

Answer b *or* c

b. Explain the principle components **8**

c. Let f(x,y) =2 $0<y<x<1$.Find F(x,y),F(x),G(y) ,f(x/y) **8**