Registration No:

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M.Sc.I
FMCC302

3rd Semester Regular Examination 2017-18
STATISTICS
BRANCH : M.Sc.I(MC)
Time: 3 Hours
Max Marks: 70
Q.CODE: B1200
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions :**   (2 x 10)

(a) What are the merits and demerits of arithmetic mean ?

(b) Calculate the weighted mean for the following data :

Value	10	12	15.	18	20
Weight	2	5	12	4	7

(c) Calculate the median income for the following data :
Income(Rs.) : 891 , 884 , 991 , 907 , 1072 , 922 , 1277 , 1153 , 2488 , 1490.

(d) What are the merits and demerits of Median?

(e) Present the following data by means of a Pie diagram.

Population	Males	Females	Girls.	Boys
Number	2000	1800	4200	2000

(f) What is the difference between dispersion and skewness ?

(g) What is the difference between point estimation and interval estimation?

(h) Write a short note on maximum likelihood method for estimation.

(i) Distinguish between one-sided and two -sided hypothesis.

(j) Write a short note on regression analysis.

Q2 (a) An incomplete frequency distribution is given as follows :   (5)

Variable	10-20	20-30	30-40	40-50	50-60	60-70	70-80	
Frequency	12	30	?	65	?	25	18	229(Total)

Given that the median value is 46, determine the missing frequencies using the median formula .

(b) Calculate the median for the unequal class intervals :   (5)

Marks	0-10	10-30	30-60	60-80	80-90
No. of Students	5	15	30	8	2

Q3 (a) Find the mode for the distribution of weight of 122 persons by grouping :   (7)

Class Interval	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180
Frequency	4	6	20	32	33	17	8	2

(b) If the mode and mean of a moderately asymmetrical series are 80 and 68 , what will be the most probable median ?   (3)

Q4 **(a)** What are the merits and limitations of Geometric mean ? Calculate the Geometric mean **(5)**
of the   following data :   1 , 7 , 29 , 92 , 115 , 375 .

(b) What are the special uses of Harmonic mean ? Calculate the harmonic mean for the **(5)**
following Data :

Value	0-10	10-20	20-30	30- 40	40-50
Frequency	8	12	20	6	4

Q5 **(a)** Compute the value of $P_5 \ and \ P_{90}$ from the data given below : **(5)**

Marks	Below 10	10-20	20-40	40-60	60-80	Above 80
No.of Students	8	10	22	25	10	5

(b) **(5)**
Calculate the coefficient of variation from the data given below :

Income	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	10	15	15	23	22	19	12	4

Q6 **(a)** Consider a poisson distribution with probability mass function $f(x, \mu) = \frac{e^{-\mu}\mu^x}{x!}, x = 0,1,2 \dots$ **(5)**

Suppose that a random sample $x_1, x_2, \dots, x_n$ is taken from the distribution .Give a
maximum likelihood estimation of μ .

(b) Find a 95% confidence interval for the mean μ of a normal population with standard **(5)**
deviation 4 from the sample 30,42,40,34,48,50.(The area lying towards the left of 1.96 is
0.975).

Q7 Calculate Karl Pearson's coefficient of skewness from the following data : **(10)**

Variable	20.5-23.5	23.5-26.5	26.5-29.5	29.5-32.5	32.5-35.5	35.5-38.5
Frequency	17	193	399	194	27	10

Q8 **(a)** Explain the significance of correlation and find the coefficient of correlation between **(5)**
X and Y for the following data.

X	39	65	62	90	82	75	25	98	36	78
Y	47	53	58	86	62	68	60	91	51	84

b) Obtain the equation of the line of regression of x on y for the following data and estimate **(5)**
x for y= 70

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71