

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER– III EXAMINATION WINTER 2015

Subject Code: 4430603**Date:05/12/2015****Subject Name: Statistical Methods (SM)****Time:10.30 AM TO 01.00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** (i) Define : Mutually Exclusive Events, Sample space. **07**
(ii) List out random sample techniques.
- (b)** Construct Stem & Leaf Display for following data. **07**

86,77,91,60,55,76,92,47,88,67,23,59,72,75,83,77,68,82,97,89,81,75,74,39,67,79,83
, 70,78,91,68,49,56,94,81

- Q.2 (a)** The total annual compensation for a board number at one of ration is based in **07**
part of cash counter.

Company	Cash Counter
American	64
Bank of Am	36
Boeing	26
Chevron	35
Dell	40
Dupond	35
Exxon	40
Ford	35
General	40
Kroger	30
Lucent	60
Motorola	36
Procter	28

- i) Compute the Mean, Median and Mode
- ii) Compute the First Quartile and Third Quartile
- iii) Compute the Range and Inter Quartile Range

(b) Consider the following data.

07

14	21	23	21	16
19	22	25	16	16
24	24	25	19	16
19	18	19	21	12
16	17	18	23	25
20	23	16	20	19
24	26	15	22	24
20	22	24	22	20

- i) Develop Frequency Distribution using class of 12 – 14, 15 – 17, 18 – 20, 21 – 23 and 24 – 26
- ii) Find Relation Frequency Distribution and Percentage Frequency Distribution.

OR

(b) Find Mean absolute deviation, variance and standard deviation of following data:

07

X : 5 9 16 17 18

Q.3 (a) A survey data is given in following table regarding person location and industry type related data and if we randomly select one person then answer following :

07

	Location	City 1	City 2	City 3	City 4
Industry type	Finance	24	10	8	14
	Marketing	30	6	22	12
	Communication	28	18	12	16

- (i) Find probability that person is from City 3.
- (ii) Find probability that person is from communication business or from City1.
- (iii) Find probability that person is from City 2 or Finance business.

(b) Find following from binomial formula:

07

- (i) If $n=4$, $p=0.10$ then find $P(x=3)$
- (ii) If $n=12$, $p=0.45$ then find $P(x= \text{greater than or equal } 7)$

OR

Q.3 (a) Bank customers arrive randomly on weekday afternoon at average rate (λ) of 3.2 customers every 4 minute. (Use poisson distribution)

07

- (i) What is the probability of having 8 customers in 4 minute?
- (ii) What is the probability of having 6 customers per 8 minute?
- (iii) What is the probability of having more than 7 customers and less than 11 customers in 4 minutes?

(b) Probability of event A occurs is 0.2 & probability of Event A and Event B occur is 0.3 then find:

07

- (i) Probability of B given that A has already occurred.
- (ii) Probability of Event A does not occur.

Q.4 (a) Use following data and answer the questions: **07**

	D	E	F	G
A	24	10	8	14
B	30	6	22	12
C	28	18	12	16

Find $P(B/F)$, $P(G/C)$.

(b) Test the following hypothesis for given data: **07**

Null hypothesis : variance of sample-1 is equal to variance of sample-2.

Alternate hypothesis : variance of sample-1 is not equal to variance of sample-2

Sample -1	Sample 2
n₁=8	n₂= 10
S₁=46	S₂= 37

OR

Q.4 (a) A company rate before and after viewing inspection report of different 7 years is given in following table. On basis of these data check hypothesis whether any significant difference between increase in company rate before and after presentation. Assume difference is normally distributed. **07**

Year	Before	After
1	32	39
2	11	15
3	21	35
4	17	13
5	30	41
6	38	39
7	14	22

(b) Write formula of poisson distribution, binomial distribution & Define cluster sampling, class midpoint. **07**

Q.5 (a) Given are Five observation for two variable X and Y. **07**

X	1	2	3	4	5
Y	3	7	5	11	14

i) Develop Scatter diagram

ii) Calculate Regression Equation by using b_0 and b_1

iii) Use estimated Regression to predict value of Y when $X = 4$

(b) Compute One-Way ANOVA table for following data & find value of F. **07**

X1	X2	X3
29	32	25
27	33	24
30	31	24
27	34	25
28	30	26

OR

Q.5 (a) Consider following data.

07

X	2	4	5	7	8
Y	2	3	2	6	4

- i) Compute the Regression Equation.
- ii) Compute the SSE, SST & SSR
- iii) Compute the Coefficient of Determination (r^2).

(b) Find Karl Pearson Coefficient of Correlation for following data.

07

(x)	6	11	15	21	27
(y)	6	9	6	17	12
