Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) • EXAMINATION – WINTER 2016

Subject Code:2142505 **Date:22/11/2016**

Subject Name:Probability and Introduction to Statistics

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

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

			MARKS
Q.1		**Short Questions**	**14**
	1	Define Random Experiment	
	2	Define Attribute Data	
	3	What is Ogives?	
	4	What is Mutually Exclusive Events?	
	5	Define Random Variable	
	6	Statistical Population	
	7	What is Standard Deviation?	
	8	What is Scatter Diagram?	
	9	Define Median	
	10	Define Mode	
	11	What is Primary Data?	
	12	What is Null Hypothesis?	
	13	Type-I and Type-II error	
	14	Define Geometric mean.	
Q.2	**(a)**	Explain Frequency Distribution in brief	**03**
	(b)	Consider an experiment of drawing two cards at random from a bag containing four cards marked with the integers 1through 4. Find the sample space of the experiment if the first card is replaced before the second is drawn.	**04**
	(c)	Find median for the following data set.	**07**

Gross profit (in % of Sales	0-10	10-20	20-30	30-40	40-50
No. of Companies	22	38	46	35	20

OR

(c)	Calculate the mode for the following data						**07**

Class	0-7	7-14	14-21	21-28	28-35	35-42	42-49
Frequency	19	25	36	72	51	43	28

Q.3	**(a)**	State Baye's Theorem	**03**
	(b)	A can hit a target four times in 5 times. B three times in 4 shots and C twice in 3 shots. Calculate the probability 1. A, B, C all may hit. 2. B, C may hit and A may lose.	**04**
	(c)	Fluctuations in the daily sales of two products, X and Y, are given below. Find out which of the two shows greater fluctuation in sales. Product X: 620, 624, 622, 625, 622, 618, 619, 616, 623, 625, 626, 625.	**07**

Product Y: 2152, 2134, 2132, 2145, 2132, 2142, 2146, 2130, 2146, 2142, 2150, 2135, 2152.

OR

Q.3 **(a)** Briefly explain Binomial Distribution **03**

(b) Explain probability sampling method **04**

(c) When a machine is set correctly, it produces 25% defectives; otherwise it produces 60% defectives. From the past knowledge and experience, the manufacturer knows that the chances that the machine is set correctly or wrongly are 50:50. The machine was set and before commencement of production, one piece was inspected and found to be defective. What is the probability of machine set-up being correct? **07**

Q.4 **(a)** Give properties of Expectation **03**

(b) Explain application of Chi-Square Test **04**

(c) In a competitive examination, 30 candidates are to be selected. In all 600 candidates appear in a written test, and 100 students will be called for interview. What is the probability that a person will be called for interview? Determine the probability of a person getting selected, if he has been called for interview. **07**

OR

Q.4 **(a)** For the probability distribution: **03**

X	0	1	2	3	4
P(X)	0.25	0.35	0.25	0.10	0.05

Find

1. $P(X \geq 2)$
2. $P(X < X \leq 3)$

(b) Briefly explain Normal Distribution **04**

(c) Discuss various approaches to assigning probability **07**

Q.5 **(a)** What is Simple Linear Regression? **03**

(b) Explain skewness and kurtosis. **04**

(c) Discuss t-test with suitable example. **07**

OR

Q.5 **(a)** Explain Correlation Coefficient. **03**

(b) Compare various measures of Central Tendencies. **04**

(c) Discuss ANOVA with suitable example. **07**

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