Seat No.: _____ Enrolment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER 1 – EXAMINATION – WINTER 2018

Subject Code: 810007 **Date:01/01/2019**

Subject Name: Quantitative Analysis (QA)

Time: 10:30 AM To 01:30 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)** Compute Mean and Standard Deviation from following table. **07**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	32	16	13	10	19

(b) Explain usefulness of coefficient of variation and compare the following two sets of data for consistency. **07**

Data set I	Data set II
49	159
82	121
77	138
54	152

Q.2 **(a)** Five students of an engineering program at certain institute were selected at random. Their Intelligent Quotient (I.Q.) and the marks obtained by them in one paper were as given below. Calculate coefficient of correlation **07**

I.Q	Marks (Out of 100)
120	85
110	80
130	90
115	88
125	92
120	87

(b) In a society there are two clubs. 60% members of the society are members of club A and 29% members of the society are member of club B while 13% members of the society are member of both clubs. Suppose if one society member is selected at random, **07**

(i) What is the probability that he is member of club A or club B?

(ii) What is the probability that he is neither member of club A nor club B?

(iii) What is the probability that he is not the member of club A but member of club B?

OR

(b) What is time series analysis and discuss the components of time series. **07**

Q.3 **(a)** According to Cellular Telecommunication Industry Association, the average local monthly cell phone bill is $42.78. Suppose local monthly cell phone bills are normally distributed, with a standard deviation of $11.35. **07**

(i)What is the probability that a randomly selected cell phone bill is more than $67.75?

(ii)What is the probability that a randomly selected cell phone bill is between $30 and $50?

(iii)What is the probability that a randomly selected cell phone bill is not more than $25

(b) Perform One Way ANOVA for following data, [Take level of significance = 0.05] **07**

1	2	3	4
113	120	132	122
121	127	130	118
117	125	129	125
110	129	135	125

OR

Q.3 **(a)** Using the following data to obtain the equation of regression line. **07**

x	Y
22	17
21	15
28	22
8	19
20	24

(b) What is decision theory? Explain in detail various decision making methods under uncertainty. **07**

Q.4 **(a)** Two different samples are taken from two different normally distributed populations. Test the following hypothesis of the difference in population means by using the following data. [Take level of significance = 0.10] **07**

H_0: $\mu_1 - \mu_2 = 0$ H_1: $\mu_1 - \mu_2 < 0$

Sample 1 Sample 2

$\bar{x}_1 = 51.3\ 2$ $\bar{x}_2 = 53.2$
$S_1^2 = 52$ $S_2^2 = 60$
$n_1 = 31$ $n_2 = 32$

(b) What is Index numbers and discuss the types of Index numbers in detail. **07**

OR

Q.4 **(a)** From the following table check if the Variable 1 is independent of Variable 2 by using Chi- square test of independence. Take $\alpha = 0.01$. **07**

	Variable 2			
Variable 1	24	13	47	58
	93	59	187	244

(b) An index consists of five items. The base period for the index is March 2012. The table provides details of these items over a period of time and the quantity consumed by a family. Construct Laspeyre quantity index. **07**

Item	Quantity in 2012	Quantity in 2017	Price per unit in 2012
1	4	8	100
2	5	12	55
3	6	8	75
4	5	8	85
5	8	15	75

Q.5	**(a)**	A pen company averages 1.2 defective pens per carton produced. The number of defects per carton is Poisson distributed. If the each carton is of 200 pens, find following probabilities. (i) Randomly selected carton do not have any defective pen (ii) Randomly selected carton is having 8 or more defective pens.	**07**
	(b)	Explain the different discrete distribution and continuous distribution with suitable examples.	**07**

OR

Q.5	**(a)**	What is Type I and Type II error? Explain with examples	**07**
	(b)	Hilton press hypothesizes that the average life of its largest web press is 14500 hours. They know that the standard deviation of press life is 2100 hours. From a sample of 25 presses, the company finds a sample mean of 13000 hours. At 0.01 significance level, should the company conclude that the average life of the presses is less than the hypothesized 14500 hours	**07**

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