Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER 01– • EXAMINATION – SUMMER-2018

Subject Code: 3519207 **Date:04/05/2018**

Subject Name: Business Statistics (BS)

Time: 10:30AM To 1:30 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 Explain following terms 14

1. coefficient of variation
2. marginal probability
3. multicollinearity
4. autocorrelation
5. family budget and cost of living index
6. cyclical variations
7. Random experiment

Q.2 A. Find mean, median and mode for following data 07

Age	Frequency
15-20	9
20-25	16
25-30	27
30-35	44
35-40	42
40-45	23
45-50	7
50-55	2

B. Write a note on decision theory 07

OR

B. Write a note on statistical graphs and charts 07

Q.3 A Assume that a factory has two machines. Past records show that machine 1 produces 30 % of the items of output and machine 2 produces 70 percent of items. Further 5 % of the items produced by machine 1 were defective and only 1 % produced by machine 2 were defective. If a defective item is drawn at random what is the probability that the defective item was produced by machine 1 or machine 2? 07

B 1. $15^{C}5$ 07

2. $15^{P}5$

OR

Q.3 A For given data construct laspeyre quantity index and paasche quantity index. (base year 1998) 07

item	Quantity in 1998	Quantity in 2005	Price per unit in 1998	Price per unit in 2005
1	4	8	100	150
2	5	12	55	110
3	6	8	75	145
4	5	8	85	165
5	8	15	75	155

B A service station has a pump that distributes diesel fuel to automobiles. The station owner estimates that only about 4 cars use the diesel pump every two hours. Assume the arrivals of diesel pump users are Poisson distributed. 07
a. what is the probability that three cars will arrive to use the diesel pump during a 1- hour period?
b. supposes the owner needs to shut down the diesel pump for half an hour to make repairs. However, the owner hates to lose any business. What is the probability that no cars will arrive to use the diesel pump during a half hour period?

Q.4 A Noida realty corporation has purchased land in the outskirts of greater Noida to develop an integrated township. NRC has three alternatives, namely to develop a township to house 10,000 families or to develop a golf course with 1000 luxury villas or to develop an integrated software complex with 6000 apartments and office space of 25000 sq. ft. The company foresees two states of nature, namely a situation where there is a strong demand for the project or a situation where there is a weak demand for the project. Following table provides the details of the payoff for the various decision alternatives. There is 65 % probability that there will be strong demand. 07
Construct decision tree to graphically represent the decision scenario and using the expected value criterion. Select the alternative with the highest expected payoff.

Decision alternative	State of nature	
	Strong demand	Weak demand
An integrated township to house 10000 families	10	3
A golf course with 1000 luxury villas	25	3
An integrated software complex	20	3

B Write a detail note on correlation and regression. Discuss difference between simple regression and multiple regression using example. 07

OR

Q.4 A The lifetime of certain kinds of electronic devices will have a mean of 300 hours and standard deviation of 25 hours. Assuming that the distribution of these lifetimes, which are measured to be the nearest hours, can be approximated closely with a normal curve, 07

i. What percentage will have lifetime of 350 hours or less?
ii. What percentage will have lifetimes from 220 or 260 hours?

B Fit the trend line and calculate trend for the year 1960. 07

X	Y
1950	28
1951	35
1952	42
1953	10
1954	22
1955	39
1956	28

Q.5 Consider following observations: 14

123,250,352,143,112,324,256,235,412,156

A Prepare five point summary
B Prepare box and whisker plot

OR

A Find mean and standard deviation
B Find range, P80 and D7.

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