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3Q

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST TRIMESTER MBA DEGREE EXAMINATION OCTOBER 2016**

MBA 11 QUANTITATIVE TECHNIQUES

Max. Marks: 60

Duration: 3 Hours

Use of statistical tables permitted

Any missing data shall be assumed. All assumptions must be clearly stated

Part A

Answer all questions. Each question carries 2 marks

1. Discuss probability by (a) Relative Frequency Approach, and (b) Subjective Approach
2. “The mean deviation of individual values in a data set from their actual mean is always zero. So, such a measure would be useless as an indicator of variation”. How can this problem be solved?
3. Differentiate between Discrete and Continuous Probability Distributions with example
4. “Because the hypothesis testing process uses sample statistics calculated from random data to reach conclusions about population parameters, it is possible to make incorrect decisions (or errors) about the null hypothesis”. What are these errors?
5. Enumerate the different steps in One-way ANOVA

(5x2 marks = 10 marks)

Part B

Answer any 3 questions. Each question carries 10 marks

6.
 - a. Explain with examples: (i) Marginal Probability, (ii) Joint Probability and (iii) Conditional Probability (3)
 - b. The track records of 3 famous national level shooters are as follows: Mr. X can hit his target 4 times in 5 shots, Mr. Y can hit 3 times in 4 shots, and Mr. Z can hit twice in 3 shots. In the final of a prestigious title, they fire a volley. What is the probability that two shots hit? (Hint: Volley – all fire once simultaneously to hit the target) (7)
7.
 - a. Calculate the Coefficient of Variation of a set of data, if Karl Pearson’s Coefficient of Skewness = 0.42, Arithmetic Mean = 86, and Median = 80. (4)
 - b. The unemployment data for some Indian cities are shown as below: (6)

No. of unemployed (in lakhs)	1 to 3	3 to 5	5 to 7	7 to 9	9 to 11	11 to 13
No. of cities	4	12	13	19	7	5

8.
 - a. “In case of a finite population, a statistical adjustment can be made to the z-formula for sample means”. Explain the correction factor applied here. (3)
 - b. In a particular curve at NH 47, the Motor Vehicle Department noticed that 100 accidents took place in a span of 500 days. Assuming that the number of accidents

per day follows the Poisson distribution, find the probability that there will be 3 or more accidents in a day. (7)

9. The QA department of a company wants to check the life of electric bulbs for bulk purchase of 10000 nos. They bought 50 nos of ‘Philips’ and ‘Eveready’ each for the quality check, since they are the market leaders. It was found that ‘Philips’ bulbs gave an average life of 1500 hours with a standard deviation of 60 hours and ‘Eveready’ gave an average life of 1512 hours with a standard deviation of 80 hours. Is there a significant difference in the mean life of the two makes of bulbs? (Take the Confidence level as 99%).
10. A research agency conducted a survey to identify the preference of colours among youth, as a consultancy process for a new apparel company. The data is tabulated as follows.

Colour	Males	Females	Total
Red	10	40	50
White	70	30	100
Green	30	20	50
Total	110	90	200

Conduct a proper statistical test to find out whether there is any significant relationship between gender and preference of colour.

(3x10 marks = 30 marks)

Part C

Compulsory question, the question carries 20 marks

11. a. Describe the following: (9)
- i. Types of correlations
 - ii. Concurrent deviation method
 - iii. Multiple regression
- b. In an effort to estimate the association between crude oil prices and gasoline process, an oil company analyst gathered the data shown over a period of several months. She lets crude oil prices be represented by the market value of a barrel of Reliance intermediate crude and gasoline prices be the estimated average price of regular unleaded gasoline in Mumbai city.

Crude oil price (Rs)	500	550	650	500	550	600	500	650	700	750
Gasoline price (Rs)	1100	1100	1150	1250	1400	1150	1300	1200	1150	1600

Compute the degree of association between crude oil process and gasoline process through Spearman’s Rank correlation Coefficient and interpret the results. (11)

(20 marks)