PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF MANAGEMENT

Max Marks: 100   Max Time: 180 Mins   Weightage: 40 %

END-TERM FINAL EXAMINATION

I Semester AY 2017-18   Course: **MGT103 BUSINESS STATISTICS**   03 JAN 2018

_____

Instructions:
   i.   Write legibly
   ii. Scientific and non-programmable calculators are permitted

_____

Part A

[5 Q x 4 M= 20 Marks]

1. An urn contains 8 white and 3 red balls. If two balls are drawn at random find the probability that (a) both are white (b) Both are red and (c) One is of each color.

2. Differentiate between probability mass function and probability density function.

3. Write Regression Equation. Discuss its interpretational importance of each term.

4. Discuss and illustrate the critical value of the test statistic.

5. Decide your answer on H_1: $\mu \leq 0$ and substantiate.

Part B

[5 Q x 8 M= 40 Marks]

6. A restaurant is experiencing discomfort discontentment among his customers. It analyses that there are 3 factors responsible such as food quality, service quality and interior quality. By conducting an analysis, it assesses the probabilities of discontentment with the 3 factors as 0.40, 0.35 and 0.25 respectively. By conducting a survey among customers it also evaluates the probabilities of a customer going away discontented on account of these factors as 0.6, 0.8 and 0.5 respectively. With this information the restaurant wants to know that if the customer is discontented, what are the probabilities that it is due to food, service or interior décor.

7. The probability that a contractor will not get a plumbing contract is 1/3 and the probability that he will get an electric contract is 4/9. If the probability of getting at least one contract is 4/5. What is the probability that he will get both the contracts?

8. To each of ten pieces of lands, a certain fertilizer was administered. The following increase in agricultural production has resulted (Kg): 8, 8, 7, 5, 4, 1, 0, 0, -1, -1. Can it be concluded that the fertiliser was responsible for the increase in Kg.? Use the following data: Mean=3.1; SD = 3.5341; assume $\mu=0$ [t_t (α, df) = t_t (0.05, 9) = 2.262 critical value from the t Table].

9. Construct and interpret a 90% confidence interval estimate for the proportion of newspapers printed during the day that have non-conforming attribute. Of the random sample of $n = 200$ newspapers, there are 35 newspapers which contain some type of non-conformance. ($Z_{\alpha/2} = 1.645$ for 90% confidence.)

10. What do you understand by Binomial Distribution? Explain the characteristics of Normal distribution.

Part C

[2 Q x 20 M= 40 Marks]

11. The marketing manager of a large supermarket chain has the business objective of using shelf space most efficiently. Toward that goal, she would like to use shelf space to predict the sales of a specialty pet food. Data are collected from a random sample of 12 equal-sized stores, with the following results:

STORE	1	2	3	4	5	6	7	8	9	10	11	12
SHELF SPACE (X) (SQUARE FEET)	5	5	5	10	10	10	15	15	15	20	20	20
WEEKLY SALES (Y) (Rs.)	160	220	140	190	240	260	230	270	280	260	290	310

1 Construct b_0 (sample intercept) and b_1 (sample slope).
2 Interpret the meaning of b_0 and b_1.
3 Predict the weekly sales of pet food for stores with 8 square feet of shelf space for pet food.

12. Write short notes on:

      (a) Exemplify Conditional and Independent Probabilities.

      (b) Explain the Probability and Non-probability Sampling with examples.

      (c) Illustrate Sampling Distribution.

      (d) Can you have 100% confidence of correctly estimating the population characteristic of interest? Give reasons for your answer.

Max Marks: 60   Max Time: 120 Mins   Weightage: 20 %

2017 MBA I SEMESTER
MID TERM EXAMINATION

I Semester AY 2017-2018   Course: MGT 103 **BUSINESS STATISTICS**   9 NOV 2017

9:30 am-11.30 am (FN)

_____

Instructions:
   i.   Write legibly
   ii.   Calculators allowed

_____

Part A

(5Q x 2 M= 10 Marks)

1. What is nominal or ordinal scale? Give some practical examples?
2. Find the median of 3.1, 2.6, 5.0, 4.7, 2.4, 3.9, 5.1, 3.6
3. The number of telephone calls received in 245 successive one minute intervals at an exchange are shown in the following distribution:

No of calls	0	1	2	3	4	5	6	7	Total
Frequency	14	21	25	43	51	40	39	12	245

   Calculate mean and mode.
4. What is meant by skewness and Kurtosis ?
5. What is a Z score? What is the method of converting X values ($X_{1,}$……X_5) to Z score.

Part B

(6Q x 5 M= 30 Marks)

6. The following distribution gives the pattern of overtime work done by 100 employees of a company. Calculate the average overtime work done by 100employees of a company. Calculate the average overtime work done per employee.

Overtime hours	10-15	15-20	20-25	25-30	30-35	35-40
Number of employees	11	20	35	20	8	6

7. Consider the following data, which relates to the age distribution of 1,000 workers in an industry.

Age (years)	< 25	25-30	30-35	35-40	40-45	45-50	50-55	>55	Total
No of Workers	120	125	180	160	150	140	100	25	1,000

   Evaluate the median age.

8. A study of 100 engineering companies gives the following information

Profit(Rs in crore)	0-10	10-20	20-30	30-40	40-50	50-60
Number of companies	8	12	20	30	20	10

Calculate the standard deviation of the profit earned.

9. The scores of two batsmen, A and B, in ten innings during a certain season, are as under:

A	32	28	47	63	71	39	10	60	96	14
B	19	31	48	53	67	90	10	62	40	80

For which of the batsmen is more consistent in scoring.

10. There are two branches of an establishment employing 100 and 80 persons respectively. If the arithmetic means of the monthly salaries paid by the two branches are Rs 275 and Rs 225 respectively, find the arithmetic mean of the salaries of the employees of the establishment as a whole.

11. Nutritional data about a sample breakfast cereals includes the number of calories per serving

Cereal	Calories
Kellogg's All Bran	80
Kellogg's Corn Flakes	100
Wheaties	100
Nature's Path Organic Multigrain Flakes	110
Kellogg's Rice Krispies	130
Post Shredded Wheat Vanilla Almond	190
Kellogg's Mini Wheats	200

Compute Q_1, Q_2, Q_3. Using five number summary comment on the nature of skewness.

Part C

(2 Q x 10M= 20 Marks)

12. The lives of two models of refrigerators turned in for new models in a recent survey are:

Life (No of Years)	No of Refrigerators A	No of Refrigerators B
0-2	5	2
2-4	16	7
4-6	13	12
6-8	7	19
8-10	5	9
10-12	4	1

What is the average life of each model of these refrigerators? Which model has more uniformity?

13. Derive frequency polygon, Ogive curves from the following frequency distribution.

Mutual Funds Price (Rs)	Number of funds (Frequency)
10-15	6
15-20	11
20-25	9
25-30	7
30-35	5
35-40	2