

USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

12MBA13

First Semester MBA Degree Examination, Dec.2016/Jan.2017
Quantitative Methods – I

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer any three full questions from Q.No.1 to Q.No.6.**
2. Question No. 7 & 8 are compulsory.
3. Statistical Tables may be used.

- 1 a. Differentiate between nominal and ratio scale data. (03 Marks)
 b. What is secondary data? What are advantages and disadvantages of using secondary data? (07 Marks)
 c. Explain the different steps involved in Research process. (10 Marks)

- 2 a. What is stratified sampling? (03 Marks)
 b. The data regarding sales and the corresponding price of a product are as given below:

| | | | | | |
|---------------|----|----|----|----|----|
| Sales (units) | 20 | 21 | 18 | 22 | 28 |
| Price (Rs) | 8 | 9 | 6 | 7 | 12 |

- Calculate Rank correlation coefficient and interpret the result. (07 Marks)
 c. The prices of plots (10ft × 10ft) in a city have a mean of 12 lakhs with a standard deviation of 2 lakhs. Assuming that the distribution of the prices of plots follow normal distribution. (10 Marks)

- 3 a. List the requisites of a good average. (03 Marks)
 b. A company has the head office at Mumbai and a branch at Bengaluru. The HR director wanted to know if the workers at the two places would like the introduction of a new incentive scheme. A survey was conducted for this purpose. Out of a sample of 500 workers at Mumbai 62% favoured. The new scheme at Bengalooru, out of a sample of 4000 workers 59% favoured the new scheme. Is there any significant difference in their attitude towards favouring the new scheme? Test the hypothesis at 5% significance level. ($Z = 1.96$ at 5% sig level). (07 Marks)
 c. List and explain the contents/format of Research Report. (10 Marks)

- 4 a. State the criteria characteristics of a good measurement tool. (05 Marks)
 b. Calculate standard deviation and variance of the output of a machine observed for 7 days which is as given below : 3, 4, 6, 8, 10, 7, 8. (05 Marks)
 c. A company has two plants to manufacture bikes plant I manufactures 80% of the bikes and plant II manufactures 20%. At plant I, 85% of bikes are found to be of good quality and 65% of bikes at plant II are found to be of good quality.
 i) What is the probability that a hike selected at random come from plant II, if it is known that it is of good quality?
 ii) What is the probability that a bike came from plant I if it is known that it is of good quality? (10 Marks)

- 5 a. State briefly meaning and usefulness/purposes of exploratory research. (05 Marks)
 b. What is observation method of data collection state the advantages of this method? (05 Marks)

- c. Calculate Median and Mode for the following data

| | | | | | | | |
|----------------------------|---------|---------|---------|---------|---------|---------|---------|
| Sales (in 00's Rs) | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70 – 80 |
| No. of outlets (frequency) | 3 | 8 | 1 | 2 | 4 | 10 | 2 |

(10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 6 a. The probability that a salesman is able to sell a product to a customer is 0.6. find the probability that out of 5 customers he has met on a day,
 i) 4 of them have purchased the product ii) No one purchased (05 Marks)
- b. The following table given the number of units produced by 4 employees A, B, C and D on 4 machines P, Q, R and S.

| Employee | Machine | | | |
|----------|---------|---|---|---|
| | P | Q | R | S |
| A | 4 | 3 | 5 | 3 |
| B | 3 | 4 | 5 | 4 |
| C | 3 | 3 | 5 | 3 |
| D | 4 | 4 | 5 | 4 |

Test the Hypothesis that mean production is same for the four machines and mean production is same for the four employees at 5% significance level.

($F = 5.41$ for $v_1 = 3$ and $v_2 = 5$ at 5%)

(15 Marks)

- 7 a. "Bright soaps and Detergent Limited" has found that their sale of their premium brand has come down by 40% in the previous 6 months. Design a Research method for analyzing this. (05 Marks)
- b. XYZ group of companies has 2 factories A and B. 'A' manufactures steel components, measured in terms of tonnes/month 'B' is into refining oil, measured in terms of litres/month. The chairman of the XYZ group wants to compare the production stability of companies A and B. Which statistical method he should use to find consistency of production and how he should interpret the results? (05 Marks)
- c. For a hypothetical company it is found that there is very high correlation between sales and advertisement expenditure. The MD of the company has set a sales target of 30 lakhs to sales manager. How much advertising budget the sales manager should ask to achieve the set target? How do you help this manager to get answer for his questions? (05 Marks)
- d. A company conducts training program to enhance production of machine shop consisting of 15 operators. The daily production of all the 15 operators is available. After the training program, production of the same 15 operators is taken. The general manager wants to test whether there is any improvement in production after training program. Which statistical test of hypothesis should used, why and how? (05 Marks)
- 8 a. Design a questionnaire to find "customers satisfaction" of a retail outlet. (10 Marks)
- b. In a company, 200 workers employed for a specific job were classified according to their performance and training received/not received to test independence of training and performance. The data is as given below :

| | Performance | | Total |
|-------------|-------------|----------|-------|
| | Good | Not Good | |
| Trained | 100 | 50 | 150 |
| Not Trained | 20 | 30 | 50 |
| Total | 120 | 80 | 200 |

Test the Hypothesis at 5% level of significance (Given $\chi^2 = 3.84$ at 1 d.f and 5% sig).

(10 Marks)

* * * * *