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**First Semester MBA Degree Examination, Dec.2014/Jan.2015**  
**Quantitative Methods – I**

Time: 3 hrs.

Max. Marks: 100

- Note:** 1. Answer any **THREE** full questions from Q.No.1 to 6.  
 2. Q.No.7 and 8 are compulsory.  
 3. Scientific calculators allowed.  
 4. Use of statistical tables allowed.

- 1 a. Write down the steps in "Business Research". (03 Marks)  
 b. Find the expected value of random variable "No of heads" while tossing three coins simultaneously. (07 Marks)  
 c. Records of ABC hospital shows the following:

Age:	56	42	72	39	63	47	50	49	40	42
BP:	127	110	140	118	129	116	130	125	115	120

What will be the BP of patient who is 45 years old? (10 Marks)

- 2 a. Write any three characteristics of "Good average". (03 Marks)  
 b. Explain the steps involved in "Testing of Hypothesis". (07 Marks)  
 c. Sales department of XYZ company observed 31% of total days the sale was under 45000 units. And 8% of total days it was over 65000 units. If the sales are distributed normally, what is the average sales? (10 Marks)

- 3 a. For a pair of variables X and Y, it was computed that  $b_{XY} = 0.85$ ,  $b_{YX} = 0.89$  and  $\sigma_x = 3$ . Establish relationship between the variables X and Y. Also interpret the relationship. (03 Marks)  
 b. A private ambulance service claims that it takes 8.9 mins on an average to reach the destination. A sample of 50 emergency calls resulted an average of 9.3 mins with the SD of 1.8 mins to reach destination. Does the sample data support the claim? (07 Marks)  
 c. Compute Mean, Median and mode from the data pertaining to marks scored by 80 students in statistics. The test is of 140 marks. (10 Marks)

Marks more than:	00	20	40	60	80	100	120
No. of students:	80	76	50	28	18	09	03

- 4 a. What is "Equal Probability Sample"? (03 Marks)  
 b. In computation of correlation analysis, it was noted that,  $n = 25$ ,  $\sum X = 125$ ,  $\sum X^2 = 650$ ,  $\sum Y = 100$ ,  $\sum Y^2 = 460$ ,  $\sum XY = 50$ . Later it was observed that two entries (X = 6, Y = 14) and (X = 8, Y = 6) were taken in place of correct entries (X = 8, Y = 12) and (X = 6, Y = 8). Compute correct correlation. (07 Marks)  
 c. A study with 1000 students revealed that 600 had rich economic background, 400 and 300 students had respectively medium and low IQ level. The rest had high IQ level. 140 IQ leveled students had poor economic background. Under rich economic background 300 students had their IQ to medium level. 160 of low IQ leveled students were from poor economic background. Do the data support "Economic background and IQ level of students are independent"? (10 Marks)

- 5 a. What is type – I error? (03 Marks)  
 b. In a factory, three machines A, B and C manufacture 25%, 35% and 40% of total products. Of the output, 5%, 4% and 2% of items were known to be defective. An item was inspected for quality check. What is the probability that, i) It is defective ii) It is good item produced by machine 'C'? (07 Marks)  
 c. Explain in detail "Non-probability sampling methods". (10 Marks)

- 6 a. What is Karl Pearson's coefficient of skewness if C.V = 40; Mean = 25 and Mode = 20? (03 Marks)  
 b. What are the characteristics of "Questionnaire"? (07 Marks)  
 c. Find the values of X and Y from the following distribution: (10 Marks)

Mid value:	15	25	35	45	55	65
Frequency:	10	X	15	20	Y	11

Note: N = 82 and Median = 41

- 7 a. A movie producer is bringing out a new movie. He intends to determine its appeal to just a particular age group or equal to all age groups. The producer has taken a random sample from the persons attended preview of movie. Suggest statistical tool to verify the producer's claim. (05 Marks)  
 b. Assume you are appearing for a competitive examination. The paper is based on multiple choice questions. Consisting ten questions with four choices. 75% score shall place you on the distinction class. What is the best tool to find the possibility of your distinction result? (05 Marks)  
 c. Government of India has resolved to survey growth in agricultural production for the current year. Key objectives include : To know the crop cultivated, yield per acre, total production and so forth. Suggest type of survey and the method for data collection. (05 Marks)  
 d. A researcher in public interest want to assess the quality of service offered by SBI. His interest ranges from knowing the customer, analysing the products and services offered customer satisfaction and identifying other gaps that needs to be filled with respect to quality of service. Suggest an appropriate research design. (05 Marks)

- 8 In a production proces five workers were appointed. They were given four different machines to work with. Production manager found the production difference when the workers were given different machiens. Production of workers on four machines were: 44; 38; 47; 36 units were produced by first worker. The second worker had produced 46; 40; 52 and 43 units from four machines. Similarly, output of third worker was 34; 36; 44; 32 fourth worker – 43 ; 38; 46; 33 and by last worker – 38; 42; 49; 39 units. These outputs of various worker has made the production manager to have assumption that the workers are not equally efficient.  
 Do you feel the manager's assumption is right? Justify. (20 Marks)

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