

**INDIAN MARITIME UNIVERSITY**  
(A Central University, Govt.of India)

**May/June 2015 End Semester Examinations**

**SEMESTER – II, M.B.A (INTERNATIONAL TRANSPORTATION AND LOGISTICS /  
PORT AND SHIPPING MANAGEMENT)**

**QUANTITATIVE TECHNIQUES FOR BUSINESS (T 1201)**

**Date:04.06.2015**

**Time:-3 Hrs**

**Max.Marks:75**

**Pass Marks:38**

**SECTION – A**

**(10x1=10 Marks)**

*Answer ALL the questions. All question carry equal Marks*

1. Data originally collected for an investigation is called.....
  - a) Primary data
  - b) Secondary data
  - c) Tertiary data
  - d) None of the above
  
2. Random sampling is also referred to as ..... sampling
  - a) Non probability sampling
  - b) Probability sampling
  - c) Judgment sampling
  - d) Quota sampling
  
3. The number of observations corresponding to a particular class s known as ..... of that class
  - a) Columns
  - b) Rows
  - c) Values
  - d) Frequency
  
4. Given mean = 25 and mode = 24, median= .....
  - a) 26.75
  - b) 24.78
  - c) 24.22
  - d) 24.67
  
5. Quartile deviation is ..... of standard deviation
  - a) 0.7185
  - b) 0.6745
  - c) 0.5617
  - d) 0.8128

6. If  $\beta_2 = 3$ , the distribution is called .....
  - a) Platykurtic
  - b) Leptokurtic
  - c) Mesokurtic
  - d) None of the above
7. Probability ranges from ..... to .....
  - a) 0 to 1
  - b) -1 to +1
  - c)  $-\infty$  to  $+\infty$
  - d) None of the above
8. If A and B are mutually exclusive events,  $P(AB) =$  .....
  - a) 1
  - b) 0.5
  - c) 0
  - d) None of the above
9. In a standard normal distribution, the value of mean is .....
  - a) 1
  - b) 0
  - c) -1
  - d) None of the above
10. Among the following which error is considered to be more dangerous under hypothesis testing?
  - a) Type I
  - b) Type II
  - c) Type I and Type II
  - d) None of the above

### **SECTION – B**

**(5x5=25 Marks)**

***Answer ANY five of the following questions. Each answer should not exceed 200 words.***

11. A ball is drawn at random from a box containing 6 red balls, 4 white balls, and 5 blue balls determine the probability that it is (i) Red, (ii) White (iii) Blue (iv) not red and (v) Red or White
12. In a certain box, the frequency distribution of the number of words per page may be taken as approximately normal with mean 800 and standard deviation 50. If three pages are chosen at random, what is the probability that none of them has between 830 and 845 words each?
13. Ten individuals are chosen at random from a normal population and their weights (in kgs) are found to be 63, 63, 66, 67, 68, 69, 70, 70, 71, 71. In the light of this data, discuss the suggestion that the mean height in the population is 66 inches.

14. Out of 320 families with 5 children each, what percentage would be expected to have (i) 2 boys and 3 girls and (ii) at least one boy? Assume equal probability for boys and girls?
15. Find the dual of the following linear programming problem  
 Minimize  $C = 14y_1 + 40y_2 + 18y_3$   
 Subject to  $2y_1 + 5y_2 + y_3 \geq 50$   
 $y_1 + 5y_2 + 3y_3 \geq 30$   
 $y_1, y_2, y_3 \geq 0$
16. From the following total cost TC functions, (1) find the average cost AC function, (2) the critical value at which the AC is minimized and (3) the minimum AC  
 (a)  $TC = 2Q^3 - 12Q^2 + 225Q$   
 (b)  $TC = Q^3 - 16Q^2 + 450Q$
17. 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% of the 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?

### SECTION – C

(4x10=40 Marks)

***Question No. 18 is compulsory. Answer ANY THREE of the remaining questions  
 Each answer should not exceed 500 words.***

18. Following are the marks obtained by two students A and B in 10 sets of examinations

Sets	1	2	3	4	5	6	7	8	9	10
Marks obtained by A	44	80	76	48	52	72	68	56	60	68
Marks obtained by B	48	75	54	60	63	69	72	51	57	56

If the consistency of performance is the criterion for awarding the prize, who should get the prize?

19. A test was given to 5 students chosen at random from the M Com class of each of the three universities in Bihar. Their scores were found as follows:

University	Scores				
A	90	70	60	50	80
B	70	40	50	40	50
C	60	50	60	70	60

Perform analysis of variance and show if there is any significant difference between the scores of students in the three universities (Given F at 5% = 3.44)

20. Two investigators study the income of a group of persons by the method of sampling. Following results were obtained by them.

Investigator	Poor	Middle	Well to do	Total
A	160	30	10	200
B	140	120	40	300
Total	300	150	50	500

Show that the sampling technique of at least one of the investigators is suspected.

For  $v = 2, \chi^2_{0.05} = 5.99$

21. Explain the steps adopted by the researcher while testing a hypothesis

22. Solve using simplex method the following problem:

Maximize Z:  $3x + 2y$

subject to  $2x + y \leq 18$

$$2x + 3y \leq 42$$

$$3x + y \leq 24$$

$$x \geq 0, y \geq 0$$

23. Explain the important methods of sampling while collecting primary data?

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