Dr. Babasaheb Ambedkar Open University
Term End Examination July - 2016

Course	**: BBAHT**		
Subject Code	**: BBAHT – 203 (Old)**	**Max. Marks**	**: 70**
Subject Name	**: Quantitative Techniques**	**Duration**	**: 03 hours**
Date	**:**	**Time**	**:**

SAMPLE QUESTION PAPER

Section A

Answer the following (any three) (30)

1. Find the median, lower quartile, upper quartile, 4th decile, and 70th percentile for the following distribution

Dividend yield	0-4	4-8	8-12	12-14	14-18	18-20	20-25	25 & above
No. of companies	10	12	18	7	5	8	4	6

2. A firm owns facilities at six places. It has manufacturing plants at places A, B, and C with daily production of 50, 40, and 60 units respectively. At places D, E, and F, the firm has three warehouses with demands of 20, 95, and 35 units respectively. Per unit shipping costs are given in following table. If the firm wants to minimize its total transportation cost, how should it route the products?

Plant	Ware house		
	D	E	F
A	6	4	1
B	3	8	7
C	4	4	2

Find the initial feasible solution using N/W corner method, least cost method and VAM.

3. Machines A, B, and C all produce the same two parts, X and Y. Of all the parts products, machine A produces 60%, machine B produces 30%, and machine C produces 10%. In addition, 40% of the parts made by machine A are part X, 50% of the parts made by machine B are part X, and 70% of the parts made by machine C are part X. A part produced by this company is randomly sampled and is determined to be an X part. With the knowledge that it is an X part, revise the probabilities that the part came from machine A, B, or C.

4. The ElectroComp Corporation manufacturers' two electrical products: air conditioners and large fans. The assembly process for each is similar in that both require a certain amount of wiring and drilling. Each air conditioner takes 3 hours of wiring and 2 hours of drilling. Each fan must go through 2 hours of wiring and 1 hour of drilling. During the next production period, 240 hours of wiring time are available and up to 140 hours of drilling time may be used. Each air conditioner sold yields a profit of ` 25. Each fan assembled may be sold for ` 15 profit. Formulate and solve this LP production mix situation to find the best combination of air conditioners and fans that yields the highest profit. Solve the problem by using graphical method.

5. The following data give the experience of machine operators and their performance ratings given by the number of good turned out per 100 pieces.

Operator	1	2	3	4	5	6	7	8
Experience (x)	16	12	18	4	3	10	5	12
Ratings (y)	87	88	89	68	78	80	75	83

Calculate the regression line of performance ratings on experience and estimate the probable performance if an operator has 7 year experience.

Section B

Answer the following (any four) (20)

1. What is simplex method? Explain various conditions of simplex method.
2. Verify that dual of dual is primal:

   Maximize $Z = 40x1 + 35x2$

   Subject to

   $2x_1 + 3x_2 \leq 60$

   $4x_1 + 3x_2 \leq 96$

   $x_1, x_2 \geq 0$

3. Calculate Karl Pearson's Coefficient of Correlation for the data given below taking 66 and 63 as assumed means for X and Y respectively:

Height of husband "X" in inches	60	62	64	66	68	70	72
Height of wife "Y" in inches	61	63	63	63	64	65	62

4. Calculate mean, median, and mode from the following data.

Marks (X_i)	0	1	2	3	4	5	6	7	8
No. of boys (F_i)	7	10	16	17	26	31	11	2	1

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5. Write down the characteristics of geometric mean. Also state its advantages and disadvantages.
6. How quartile is calculated? Explain.

Section C

A. MCQ (2x5) (10)

1. The value of r^2 for a particular situation is 0.81. What is the coefficient of correlation?
    a. 0.81
    b. 0.09
    c. 0.9
    d. Cannot be determined from the information given.
2. In linear programming, graphical method can be applied when there is/are only _____ variables.
    a. One
    b. Two
    c. Three
    d. Four
3. Which of the following is not a method to find initial feasible solution in a transportation problem?
    a. North-west corner method
    b. Modified distribution (MODI) method
    c. Vogel's approximation method
    d. None of the above
4. If one event is unaffected by the outcome of another event, the two events are said to be
    a. Mutually exclusive
    b. Dependent
    c. Independent
    d. None of the above
5. In a linear programming problem, if a variable can be increased indefinitely without ever violating the feasibility, the LPP is said to have
    a. Degeneracy
    b. Unbounded solution
    c. Non-feasible solution
    d. None of the above

B. Do as Directed (2x5) (10)

SAMPLE QUESTION PAPER

1. Define statistics and state its limitations.
2. Explain in brief the properties of regression co-efficient.
3. Define feasible solution in relation with transportation problem.
4. What is game theory? Discuss its importance in business decision.
5. Write short note on Decision Analysis.

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