

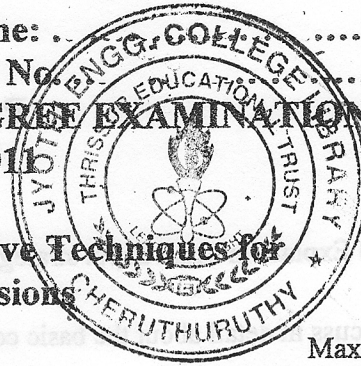
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Name:

Reg. No.

**FIFTH SEMESTER B.TECH. DEGREE EXAMINATION,
OCTOBER 2011**

**EC/PTEC.09.502 – Quantitative Techniques for
Managerial Decisions**



Duration: 3 Hours.

Max Marks: 70.

Part A (5 X 2 = 10 Marks)

- 1) Differentiate between strategic decision making and tactical decision making.
- 2) Distinguish between single stage and Multistage decision making.
- 3) What do you mean by selective inventory control?
- 4) Define slack variable related to linear programming.
- 5) What is assignment problem in operations research?

Part B (4 X 5 = 20 Marks)

6) From historical data, Harry's Car Wash estimates that dirty cars arrive at the rate of 10 per hour all day Saturday. With a crew working the wash line, Harry figures that cars can be cleaned at the rate of one every 5 minutes. One car at a time is cleaned in this service system. Assuming Poisson arrivals and exponential services rate times, find the

- a. average number of cars in line
- b. average time a car waits before it is washed
- c. average time a car spend in the service system
- d. probability that is no cars are in the system

7) What are the different steps involved in Baye's decision theory?

8) Explain classical EOQ model.

9) A transport company has two types of trucks, Type A and Type B. Type A has a refrigerated capacity of 20 m^3 and a non-refrigerated capacity of 40 m^3 while Type B has the same overall volume with equal sections for refrigerated and non-refrigerated stock. A grocer needs to hire trucks for the transport of $3,000 \text{ m}^3$ of refrigerated stock and $4,000 \text{ m}^3$ of non-refrigerated stock. The cost per kilometer of a Type A is \$30 and \$40 for Type B. How many trucks of each type should the grocer rent to achieve the minimum total cost?

10) With the start of school approaching, a store is planning on having a sale on school materials. They have 600 notebooks, 500 folders and 400 pens in stock, and they plan on packing it in two different forms. In the first package, there will be 2 notebooks, 1 folder and 2 pens, and in the second one, 3 notebooks, 1 folder and 1 pen. The price of each package will be \$6.50 and \$7.00 respectively. How many packages should they put together of each type to obtain the maximum benefit?

11) Explain stepping stone algorithm.

Part C (4x10=40 Marks)

12) a) Explain in detail about strategy formulation and modelling for decision making.

OR

b) Discuss in detail about the basic concepts and flow problems of Networks.

13) a) Discuss in detail about dynamic inventory control models.

OR

b)(i) Write a note on P system and Q system.

(ii) Describe the structure of inventory problems.

14) a) How to reduce a feasible solution to basic feasible solution? Explain with an example.

OR

b) (i) Explain Charnes' M method.

(ii) Write a note on Optimality and Duality.

15) a) Explain in detail about Stepping stone algorithm and UV method.

OR

b) Explain the inequality constraints, degeneracy and assignment problems in Transportation.
