QUESTION BANK

M.Sc. MATHEMATICES 1st YR SEM II

Operational Research

1) Discuss the origin and development of OR. What are the limitations of OR? How computer has helped in popularizing OR?
2) Describe some methods of OR.
3) Operations research. What, where, why and how?
4) Discuss the significance and scope of OR in modern management.
5) Explain how and why OR methods have been valuable in aiding executive decisions.
6) "Model building is the essence of OR approach '. Discuss.
7) What are the essential characteristics of a linear programming model?
8) Explain the terms: key decision, objective alternatives and constraints in the context of linear optimization models by assuming a suitable industrial situation.
9) What is linear programming? Discuss the application of linear programming to managerial decision making.
10) A card is drawn from a deck of cards. What is the probability that the card drawn is a heart? What is the probability that the card drawn is an ace?
11) An urn contains 10 black ,15 white and 10 red balls. What is the probability of drawing a black, a white or a red ball?
12) What is Complementary Events?
12) State and explain Bayes' theorem.
13) Define RANDOM VARIABLES.
14) What is central tendency?
15) Explain Bernoulli Trial and Binomial Distribution.
16) Consider the tossing of a fair coin. Find the probability of getting exactly two heads (In any order) on the three tosses of the fair coin.
17) If on an average 8 ships out of 10 arrive safely at a port, find the mean and standard deviation of the number of ships arriving safely out of a total of 1,600 ships.
18) Differentiate between
    (i) Mutually exclusive events and non-exclusive events.
    (ii) Conditional and joint probabilities.

19) Why does the normal distribution hold the most honorable position in probability Theory.
20) What are the axioms of probability?
21) What is the sample space for the experiment which consists of drawing one ball from an urn containing 8 balls of which 3 are green and 5 are red? The balls have been numbered 1 through 8.
22) Write short note on the value of perfect information.
23) Write Advantages and Limitations of the Decision Tree Approach.
24) Explain Utility Theory.
25) Write Characteristic of game.

26) Write Limitations of Break-Even Analysis.
27) Explain Payback Period Method.
28) Calculate the NPV for a project which initially costs Rs. 5,000 and generates year end cash inflows of Rs. 1,800 , Rs. 1,600 , Rs. 1,400 , Rs. 1,200 and Rs. 1,000 respectively in the five years of its life. Assume rate of return as 10%.
29) What is investment analysis? Why is it of great significance to a firm?
30) Write Applications of QUEUING MODELS.
31) Discuss the costs associated with queuing system. Also explain the concepts of optimum servicing rate and optimum cost.
32) Define a queue and explain the various queue disciplines.
33) Write a note on various assumptions made in single-channel queuing theory.
34) Trains arrive at the yard every 15 minutes and the service time is 33 minutes. If the line capacity of the yard is limited to 4 trains, find
(i)The probability that the yard is empty,
(ii)the average number of trains in the system.
35) Derive a relationship for expected number of customers in queue for infinite Population, multichannel Poisson arrival and exponential service system.
36) The demand for a commodity is 100 units per day. Every time an order is placed, a fixed cost of Rs. 400 is incurred. Holding cost is Rs. 0.08 per unit per day. If the lead time is 13 days, determine the economic lot size and the recorder point.
37) Define inventory. What are the advantages and disadvantages of having inventories?
38) Derive EOQ formula for an inventory model with finite production rate and shortages permitted.
39) What is ABC Analysis? and write its advantages.
40) What is periodic review system? State its advantages and disadvantages.