

Roll No.

MU-2407

Applied Operations Research

Master of Business Administration

(MBA-13/MBA-12/MBA-10)

Fourth Semester, Examination, 2017

Time : 3 Hours

Max. Marks : 60

Note : This paper is of **sixty (60)** marks containing **three (03)** sections A, B and C. Learners are required to attempt the questions contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of fifteen (15) marks each. Learners are required to answer *two* (02) questions only.

1. A barber with one man shop takes exactly 25 minutes to complete the hair cut. If customers arrive in Poisson fashion at an average rate of one every 40 minutes. How long on the average time must a customer wait for the service ?
2. What do you understand from the term "economic life of equipment" ? Derive the formula for the optimum retentive period.

3. How does “decision-making under uncertainty” differ from “decision-making under risk” ? What evaluation criteria can be used to select an optimal decision alternative ?
4. Describe the problem of inventory control, when the stochastic demand is uniform, production of commodity is instantaneous and lead time is negligible.

Section–B

(Short Answer Type Questions)

Note : Section ‘B’ contains eight (08) short answer type questions of five (05) marks each. Learners are required to answer *four* (04) questions only.

Write short notes on the following :

1. Sensitivity Analysis
2. Limitations of Operations Research
3. Probabilistic *or* Models
4. Bellman principle
5. Stochastic Inventory Models
6. Simulation Models
7. Applied Queuing Models
8. Critical Path Method (CPM)

Section–C

(Objective Type Questions)

Note : Section ‘C’ contains ten (10) objective type questions of one (01) mark each. All the questions of this section are compulsory.

Choose the correct answer from the given choices.

1. An example of deterministic model is :
 - (a) LPP
 - (b) Queuing Theory
 - (c) Both of the above
 - (d) None of the above

2. Decision variables are :
 - (a) Controllable
 - (b) Uncontrollable
 - (c) Parameters
 - (d) None of the above
3. Which costs can vary with order quantity ?
 - (a) Unit cost only
 - (b) Re-order cost only
 - (c) Holding cost only
 - (d) All of the above
4. In queue description M/M/1, the number of servers are
 - (a) 1
 - (b) M
 - (c) 2
 - (d) None of these
5. A random number refers to :
 - (a) An observation from a set of number each of which is equally likely
 - (b) An observation from a set of number each of which is not equally likely
 - (c) Both of the above
 - (d) None of the above
6. A queue is formed when :
 - (a) Customers wait for services
 - (b) Service facility waits for the customers
 - (c) Either (a) or (b)
 - (d) None of the above

7. Customer behaviour in which he/she moves from one queue to another in a multi-server situation is called :
- (a) Balking
 - (b) Reneging
 - (c) Jockeying
 - (d) Alternating
8. The PERT network model assumes that :
- (a) Each activity achieves its optimistic time.
 - (b) The costs are uniformly distributed over the life of the activity.
 - (c) The activity times are statistically independent.
 - (d) None of the above
9. Sequencing problem can be solved using :
- (a) Hungarian algorithm
 - (b) Vogel's algorithm
 - (c) Gupta's algorithm
 - (d) Johnson's algorithm
10. The cost of maintenance of a machine is given, as a function increasing with time and its scrap value is :
- (a) Increased
 - (b) Decreased
 - (c) Constant
 - (d) None of the above