



Name :

Roll No. :

Invigilator's Signature :

CS/MHA/SEM-3/MHA-305/2010-11
2010-11
OPERATION RESEARCH

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Graph sheet(s) will be supplied by the Institute on demand.

GROUP – A
(Multiple Choice Type Questions)

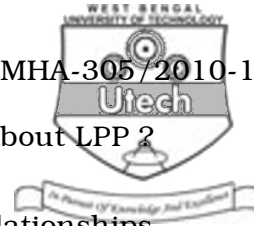
1. Choose the correct alternatives for any *ten* of the following :

$10 \times 1 = 10$

- i) Decision analysis is concerned with
 - a) decision making under certainty
 - b) analysis of information that is available
 - c) determining optimal decision in sequential manner
 - d) all of these.
- ii) The decision maker's knowledge and experience may influence the decision making process when using criterion of regret.
 - a) realism
 - b) maximin
 - c) maximax
 - d) minimax.



- iii) Queue can form only when
 - a) arrivals exceed service capacity
 - b) arrivals equal service capacity
 - c) service facility is capable to service all the arrivals at a time
 - d) there are more than one service facility.
- iv) Multiple servers may be
 - a) in parallel
 - b) in series
 - c) in combination of parallel & series
 - d) all of these.
- v) An optimization model in OR
 - a) provides decision within its limited context
 - b) mathematically provides best decision
 - c) helps in evaluating various alternative constantly
 - d) all of these.
- vi) A feasible solution to an LPP
 - a) must satisfy all the problems constraint simultaneously
 - b) must be corner point of the feasible region
 - c) need not satisfy all of the constraints, only some of them
 - d) must optimize the value of the objective function.



- vii) Which of the following is not correct about LPP ?
- a) All constraints must be linear relationships
 - b) Objective function must be linear
 - c) All constraints and decision variables must be of either greater or lesser type
 - d) All decision variables must be non-negative.
- viii) Operations Research came into existence
- a) in the year 1940
 - b) in the military context
 - c) during World War I
 - d) during World War II.
- ix) The objective of network analysis is to
- a) minimize total project cost
 - b) minimize total project duration
 - c) minimize production delays, interruption and conflicts
 - d) all of these.

CS/MHA/SEM-3/MHA-305/2010-11



- x) CPM means
 - a) Critical Path method
 - b) Crash Project Management
 - c) Critical Project Management
 - d) Critical Path Management.
- xi) The concept of strategic management was put forward by
 - a) F. W. Taylor
 - b) Eric Berne
 - c) Michel Porter
 - d) Victor Vroom.
- xii) The primary activities of value chain analysis are all, *except*
 - a) Inbound logistics
 - b) Outbound logistics
 - c) marketing and sales
 - d) Human resources.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.

3 × 5 = 15

2. Define Merger and Acquisition.
3. What do you mean by Levels of organisational strategy making ?
4. A company is making two products A and B. The cost of producing one unit of product A and B is Rs. 60 and Rs. 80 respectively. As per agreement, the company has to supply at least 200 units of product B to its regular customers. One unit of product A requires one machine hour whereas product B has machine hours available abundantly within the company. Total machine hours available for product A are 400 hours. One unit of each product A and B requires on labour hour each and total of 500 labour hours are available. The company wants to minimize the cost of production by satisfying the given requirements. Formulate the problems as an LPP.
5. Prepare a network diagram for the following data :

Activity :	A	B	C	D	E	F	G	H	I	J
Preceding activities :	none	A	A	B	A	B, E	C	D, F	G	H, I
6. Enumerate Brick and Click strategies.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.

3 × 15 = 45

7. What do you understand by the term 'strategy' ? How is it different from organizational mission, vision and objectives ? Do environmental factors affect the type of decision making an organization does ?
2 + 6 + 7
8. A department store has a single cashier. During the rush hours, customers arrive at the rate of 20 customers per hour. The average number of customers that can be processed by the cashier is 24 per hour. Assume that the conditions for the use of single-channel queuing model apply. What is the –
- i) probability that the cashier is idle ?
 - ii) average number of customers in the queuing system ?
 - iii) average time a customer spends in the system ?
 - iv) average number of customers in the queue ?
 - v) average time a customer spends in the queue waiting for service ?
9. What is stakeholder analysis ? How is it different from corporate governance ? What measures do companies adopt to implement effective control mechanisms for better management ?
3 + 2 + 10



10. a) An investor has a choice between (i) risky investment plan promising Rs. 7 lakhs with probability 0.6 and Rs. 4 lakhs with probability 0.4 and (ii) a regular investment plan promising Rs. 3.5 lakhs with 0.6 probability and Rs. 2 lakhs with probability 0.4. Which investment plan should he choose ?
- b) *A* and *B* are two products to be manufactured. Unit profits are Rs. 40 and Rs. 35 respectively. Maximum material available is 60 kgs and labour 96 hours. Each unit of *A* needs 2 kg of material and 3 man-hours, whereas each unit of *B* needs 4 kg of material and 3 man-hours. Find optimal level of *A* and *B* to be manufactured using graphical method of LPP. 6 + 9
11. a) Discuss with examples how techniques of Operations Research is used in hospital for decision making process.
- b) State the circumstances where CPM is a better technique of project management than PERT. 10 + 5
