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### **February-2017**

### **(Diploma In Operation Research) DOR**

### **DOR-01,02,03,04**

#### **IMPORTANT INSTRUCTIONS**

- Students have download assignments from University website.
- It is compulsory to submit assignments to appear for exam.
- Exam form will not be accepted from the student who has not submitted assignment on or before given date.
- Last date of submission of prepared assignments to study center is **30/07/2017** After this date, assignments will not be accepted.
- It is compulsory to collect receipt of submission of assignments from the study center.
- Make sure to collect your evaluated assignments from your study center with evaluation sheet.
- Students can check their assignments marks on university website.
- Passing criteria for Diploma course is 50% for all assignment subjects.

## Diploma programmes

**Dear Student,**

You are required to do one assignment for the **Diploma Programme** It is a Tutor Marked Assignment (TMA) and carries 100 marks. It covers four blocks of the course.

As in day-to-day life, **Planning** is important in attempting the assignment as well. Read the assignment carefully; go through the units on which the questions are based; jot down some points regarding each question and then re-arrange them in a logical order. In the Long-type answer, pay attention to your introduction and conclusion. The introduction must tell you how to interpret the given topic and how you propose to develop it. The conclusion must summarize your views on the topic.

Make sure that your answer :

- a) is logical
- b) is written in simple and correct English
- c) does not exceed the number of words indicated in your questions
- d) is written neatly and clearly.

ROLL NO: \_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

DATE: \_\_\_\_\_

Mo No. \_\_\_\_\_

COURSE TITLE: \_\_\_\_\_

ASSIGNMENT: \_\_\_\_\_

STUDY CENTRE: \_\_\_\_\_

**Please remember that it is compulsory to submit your assignment before you can take the Term End Examination. Also remember to keep a copy of your assignment with you and to take a receipt from your Study Centre when you submit the assignment.**

**Good Luck,**

# Dr. Babasaheb Ambedkar Open University

## Assignment :- (DOR-1)

### Basics of Operation Research

**Last Date of Submission At Study Center :- 30/07/2017 Max-Marks-100**

**Section : A Answer the Following Questions. (Any Two) (20 x 2 = 40)**

- (1) Define Operation Research and State its relations with decision making.
- (2) State the uses of Operation Research in various areas.
- (3) Pallavi Ltd. has two machines. A and B. She manufactures two products P and Q on these machines. For manufacturing product P she has to use machines A for 3 hours and machine B for 6 hours and for manufacturing product Q he has to use machine A for 6 hours and Machine B for 5 hours. On each unit of P she earns Rs. 4 and on each unit of Q she earns Rs. 5.

How many units of P and Q should be manufactured to get maximum profit. Each machine may not be used for more than 2100 hours.

**Section : B Answer the Following Questions. (Any Two) (15 x 2 = 30)**

- (1) Describe the history of Operation Research in brief.
- (2) Explain the Opportunities and Short comings of Operation Research.
- (3) Describe various Operation Research Models.

**Section : C Write Short Note on the following. (Any Four) (4 x 5 = 20)**

- (1) The Structure of the linear programming model.
- (2) Advantages of Linear Programming Models.
- (3) The application areas of linear programming models.
- (4) The guidelines in linear programming model formulation.
- (5) Graphical solution of linear programming problems.

**Section : D (A) State the Sentence are true or false. (5 x 1 = 5)**

- (1) Operation Research addressed to managerial decision making or problem solving.
- (2) Operation Research is concerned with the best distribution of scarce resources.
- (3) PERT/CPM uses the techniques of the identification of the critical path.
- (4) Financial Management helps to determine product mix.
- (5) Marketing Management helps in Physical Distribution.

**Section : D (B) Fill in the blanks.**

**(5 x 1 = 5)**

- (1) \_\_\_\_\_ helps in staffing problem.
- (2) Financial Management help in \_\_\_\_\_ selection.
- (3) All the Optimal solutions is \_\_\_\_\_ as alternative optimal solution.
- (4) Operation Research Considers all available factors, conditions and \_\_\_\_\_.
- (5) \_\_\_\_\_ is used to give the best results under the worse conditions.

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**Assignment :- (DOR-2)**

**Assignment and Transportation Problems**

Last Date of Submission At Study Center :- **30/07/2017**

Max-Marks-100

**Section : (A) Answer the Following Questions. (Any Two)**

**(20 x 2 = 40)**

- (1) Explain the solution Method of assignment problem.
- (2) Explain the Variations of the Assignment Problem.
- (3) Discuss the steps of the Transportation Method.

**Section : (B) Answer the Following Questions. (Any Two)**

**(15 x 2 = 30)**

- (1) The expense price of a machine is Rs. 5000. Its additional information is given as follows. When should the machine be replaced.

Year	1	2	3	4	5	6
Maintenance Rs.	1500	1600	1800	2100	2500	2900
Scrap Value Rs.	3500	2500	1700	1200	800	500

- (2) Solve the following transportations problem by Vogel's method and find the total expenses.

Destinations	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
Origins					
Q <sub>1</sub>	1	2	1	4	30
Q <sub>2</sub>	3	3	2	1	50
Q <sub>3</sub>	4	2	5	9	20
Requirement	20	40	30	10	100

- (2) Explain the North-West Corner and Least Cost Method for Finding Initial Solution.

**Section : (C) Write Short Note on the Following. (Any Four)**

**(5 x 4 = 20)**

- (1) North-West Corner Method
- (2) Least Cost Method
- (3) Vogel's Approximation Method.
- (4) Transportation Algorithm. (Modi Method)

**Section : (D) State the Sentence are true or false.**

**(5 x 2 = 10)**

- (1) The Problem of assignment arises because availability of more than one sources for work distribution.
- (2) Multi-Objective optimization does not deal with solving optimization problems.
- (3) More than One Solution is available for the problem are known as Pareto Optimal solutions.
- (4) For solving the problem of assignment it must have a square matrix.
- (5) The main objective of transportation problem is to reduce the time of transportations.

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**Assignment :- (DOR-3)**  
**PERT & CPM**

Last Date of Submission At Study Center :- **30/07/2017**

**Max-Marks-100**

**Section : (A) Answer the Following Questions.**

**(2x20=40)**

- (1) Draw a network diagram for the project.

Activity	Description	Predecessor Activity
A	Open Work Order	-
B	Get Material/For X	A
C	Get Material for Y	A
D	Turn X on lathe	B
E	Turn Y on lathe	B,C
F	Polish Y	E
G	Assemble X and Y	D,F
H	Pack	G

(2) A Project is represented by the network shown below.

Task	A	B	C	D	E	F	G	H	I
Optimistic Time	5	18	26	16	15	6	7	7	3
Pessimistic	10	22	40	20	25	12	12	9	5
Most like Time	8	20	33	18	20	9	10	8	4

Determine the following :

1. Expected task times and their variance.
2. The Critical path.

**Section : (B) Answer the Following Questions.**

**(15 x 2 = 30)**

- (1) Describe the concepts of PERT & CPM state main points of difference in between them.
- (2) Write a Short note on Resource smoothing and Resource Leveling.

**Section : (C) Write Short Note on the Following.**

**(5 x 4 = 20)**

- (1) Phases of Project Management.
- (2) Forward Pass Method
- (3) Backward Pass Method
- (4) Time – Expenses Trade off Procedure.

**Section : (D) Explain the following terms :**

**(5 x 2 = 10)**

- (1) Optimistic time
  - (2) Most likely time
  - (3) Event Float
  - (4) Successor Activity
  - (5) Dummy Activity
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# Assignment :- (DOR-4)

## Other Methods of O.R.

Last Date of Submission At Study Center :- 30/07/2017

Max-Marks-100

**Section : (A) Answer the Following Questions. (Any Two) (20 x 2 = 40)**

- (1) State the types of environment under which decisions can be made.
- (2) What are the reasons for which risk reducing measures to be used in capital budgeting ?
- (3) Explain simulation as a risk reducing measure in capital budgeting.

**Section : (B) Answer the Following Questions. (Any Two) (15 x 2 = 30)**

- (1) Explain Sensitivity analysis as a risk reducing measure.
- (2) What a maximum amount can be paid for obtaining perfect information.
- (3) Explain the decision tree approach in decision making.

**Section : (C) Write short note on the following. (5 x 4 = 20)**

- (1) Concept of decision making.
- (2) Expected value of perfect information
- (3) Expected Opportunity Loss
- (4) Coefficient of Variation.

**Section : (D) State the Sentence are true or false. (5 x 2 = 10)**

- (1) The Payoff (outcome) values are not always conditions values.
- (2) The maximum criterion is based upon the 'conservative approach'
- (3) The maximum criterion B based upon 'extreme optimism'
- (4) A decision tree B not highly useful to a decision maker in multistage situations.
- (5) If the net present value of risk less, cash flows is positive than then project is not accepted.