

CDOE
MASTER OF BUSINESS ADMINISTRATION (2013 COURSE)
M.B.A. Sem-III : WINTER :- 2021
SUBJECT: OPERATIONS RESEARCH

Day : Friday
Date 18-02-2022

W-9972-2021

Time : 10:00 AM-01:00 PM
Max. Marks: 70

N.B.

- 1) Attempt any **FOUR** questions from Section – **I** and any **TWO** questions from Section – **II**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in the **SEPARATE** answer book.
- 4) Use of non – programmable calculator is **ALLOWED**.
- 5) Graph papers and statistical tables will be provided if necessary.

SECTION – I

Q.1 What is a transportation problem? Discuss in brief the different methods used for finding initial basic feasible solution of transportation problem **(10)**

Q.2 For the given transportation problem find initial basic feasible solution by least cost method **(10)**

Factories

	P	Q	R	S	Supply
A	10	18	11	7	20
B	9	12	14	6	40
C	8	9	12	10	35
Demand	16	18	51	30	

Q.3 A Project schedule has the following characteristics: **(10)**

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-9	8-10	9-10
Time (days)	4	2	1	1	6	5	4	8	1	2	1	8	7

- i) Construct the network
- ii) Compute earliest and latest times and
- iii) Find the critical path

Q.4 The probability distribution of the agricultural yield in kg per acre of land is given below **(10)**

Yield in kg per acre	120	140	160	180
Probability	0.18	0.26	0.44	0.12

Simulate the yield for next 10 years and calculate average yield using the following random numbers. 20, 72, 34, 54, 30, 22, 48, 74, 76, 02

Q.5 Write short notes on any **TWO** of the following **(10)**

- a) Application of LPP
- b) Monte – carto technique
- c) Assignment problem for maximization
- d) Floats and slack in network analysis

P.T.O.

SECTION - II

Q.6 On completing the constructions of a house, Ajay discovers that 100 square feet of plywood scrap and 80 square feet of wood scrap are in usable form for the construction of tables and book cases. It takes 16 square feet of plywood and 8 square feet of wood to make a table while 12 square feet of plywood and 16 square feet of wood are required to construct a book case. By selling the finished product to a local furniture store, Ajay can realize a profit of Rs. 250 on each table and Rs. 290 on each book case. How should Ajay most profitably use the left over wood? Solve graphically. **(15)**

Q.7 A project work consists of four major jobs for which an equal number of contractors have submitted tenders. The tender quoted (in lakhs of rupees) is given in the matrix. **(15)**

Job

Contractors	A	B	C	D
1	10	24	30	15
2	16	22	28	12
3	12	20	32	10
4	13	26	34	16

Find the assignment which minimizes the total cost of the project.

Q.8 Following are the activities of a project **(15)**

Activity	Activity Times in Weeks		
	Optimistic time	Most likely	pessimistic
1-2	2	3	4
1-4	3	6	9
1-5	2	3	4
2-3	1	2	3
2-4	2	2	2
4-6	3	6	9
5-6	4	5	6
3-7	4	4	4
6-7	2	3	4

- (i) Find expected duration and variance for each activity
- (ii) Draw network diagram.
- (iii) Find Critical path and expected project duration

* * *