

28. Explain the difference between expected opportunity loss and expected value of perfect information.

(6 x 4 = 24 Marks)

**PART D**

Answer any *two* questions. Each question carries 10 marks.

29. Explain the phases of Management Science?

30. A dealer wishes to purchase a number of fans and sewing machines. He has only Rs.5760 to invest and has space for almost 20 items. A fan costs him Rs. 360 and a sewing machine Rs. 240. His expectation is that he can sell a fan at profit of Rs22 and a sewing machine at a profit of Rs.18. Assuming that he can sell all the items that he can buy, how should he invest his money in order to maximize his profit. Formulate it as a LPP .and then use the graphic method to solve it.

31. Find initial solution for the transportation problem by VAM.

	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	Supply
F <sub>1</sub>	3	3	4	1	100
F <sub>2</sub>	4	2	4	2	125
F <sub>3</sub>	1	5	3	2	75
Demand	120	80	75	25	300

(2 x 15 = 30 Marks)

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**18U448**

(Pages: 4)

Name: .....

Reg. No.....

**FOURTH SEMESTER B.B.A. DEGREE EXAMINATION, APRIL 2020**

(CUCBCSS-UG)

(Regular/Supplementary/Improvement)

**CC15U BB4 C04 – MANAGEMENT SCIENCE**

(Complementary Course)

(2015 Admission onwards)

Time: Three Hours

Maximum: 80 Marks

**PART A**

Answer *all* questions. Each question carries 1 mark.

- LPP involves the development of \_\_\_\_\_ to obtain the best solution for the allocation problem.
- \_\_\_\_\_ are activity variables such as products, services etc.
- An activity which must be completed before one or more other activities start is known as \_\_\_\_\_ activity.
- \_\_\_\_\_ in a LPP occurs when one or more of the basic variables assume a value of zero
- The expected value of perfect information is equal to \_\_\_\_\_

Choose the correct answer:

- Which of the following might be viewed as an optimistic decision criterion?  
a) Hurwicz criterion    b) Maximin    c) Maximax    d) Minimax
- If a decision theory problem has 3 decision alternatives and 4 states of nature, the number of payoffs in that problem will be  
a) 3    b) 4    c) 12    d) 64
- The maximum time that an activity would take if everything goes wrong and abnormal situations are prevailed  
a) Optimistic    b) Most likely    c) Pessimistic    d) None of the above
- Any activity which does not consume either any resource or time is called \_\_\_\_\_ activity.  
a) Predecessor    b) Successor    c) Dummy    d) End
- Waiting line theory deals with analysis of \_\_\_\_\_  
a) Games    b) Activity    c) Queues    d) all of the above

(10 x 1 = 10 Marks)

**PART B**

Answer any *eight* questions. Each question carries 2 marks.

11. What is degeneracy?
12. What is Decision Theory?
13. What is an unbalanced transportation problem?
14. What is minimax and maximax criteria?
15. What is CPM?
16. Draw the network diagram

Activity	Predecessor Activity
A	-
B	-
C	A
D	B
E	C, D
F	C, D
G	E
H	F

17. Differentiate PERT and CPM
18. What is Slack and Float?
19. Woods Products Ltd. Currently produces 2 major products, Tables and chairs. When sold, each chairs yields a profit of Rs.35 and table Rs.45. An analysis of the production worksheets reveals the following manufacturing data:

Product	Man Hours Per unit	Machine Hours Per unit
Chairs	5	0.8
Table	8	1.2
Available Time	800 Man Hrs	485 Machine Hrs

The company has a minimum demand for 50chairs and a maximum demand for 25 tables during year 2003. Construct an appropriate linear programme for maximizing the profit of Woods Product Ltd.

20. Explain briefly the three methods of initial feasible solution for transportation problems.

**(8 x 2 = 16 Marks)**

**PART C**

Answer any *six* questions. Each question carries 4 marks.

21. Discuss the briefly method of solving Linear Programming Problem.
22. Describe briefly the applications of Operations Research in managerial decision making.  
Give suitable examples
23. Solve the following problem by Least cost entry method

Plant/warehouse	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	Supply
P <sub>1</sub>	7	6	9	20
P <sub>2</sub>	5	7	3	28
P <sub>3</sub>	4	5	8	17
Demand	21	25	19	65

24. What are the limitations of employing Linear programming technique?
25. Draw a network diagram to the following activities.

Activity	Time duration	Activity	Time duration
1- 2	4	5- 6	4
1- 3	1	5- 7	8
2 - 4	1	6- 8	1
3- 4	1	7-8	2
3-5	6	8 -10	5
4- 9	5	9- 10	7

26. Solve the following LPP

$$\text{Max. } Z = 500X_1 + 600X_2 + 1200 X_3$$

$$\text{Subject to } 2X_1 + 4X_2 + 6X_3 \leq 160$$

$$3X_1 + 2X_2 + 4X_3 \leq 120$$

$$X_1, X_2, X_3, \geq 0$$

27. A management is faced with the problem of choosing one of the products for manufacturing. The chance that market will be good, fair, or bad is 0.75, 0.15, and 0.10 respectively. Select the decision as per EMV criterion.

	States of nature		
Acts	Good	Fair	Fair
A	35000	15000	5000
B	50000	20000	-3000