30. A bakery shop owner is faced with the problem of how many cakes to buy in order to meet the day's demand. The shop owner prefer not to sell the day-old goods in the competition with fresh products ; left over cakes are , therefore , a complete loss, There for he collected the information on the past sales on a selected 100 day period as shown in the table below:

Sales per day	No of Days	Probability
25	10	0.10
26	30	0.30
27	50	0.50
28	10	0.10

A cake costs Rs 100 and sells for Rs 120 Construct the payoff table and the opportunity loss table. What is the optimum number of cakes that should be bought each day?

31. Explain the Role of OR in Business Management.

(2 x 15 = 30 Marks)

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16U455 (Pages: 2) Name: ……

Reg. No……..

FOURTH SEMESTER B.B.A. DEGREE EXAMINATION, APRIL 2019

(CUCBCSS-UG)

CC15U BB4 C04 - MANAGEMENT SCIENCE

(Complimentary Course)

(2015 Admission onwards)

Time: Three Hours Maximum: 80 Marks

Part A

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

Fill in the blanks:

1. A physical model is an example of ……
2. Linear programming problem involving only two variables can be solved by ……
3. An assignment problem can be solved by ……
4. If $\sum \text{Requirement} = \sum \ldots\ldots\ldots\ldots$, then transportation problem is balanced.
5. An event represents the joint examples of more than one activity, it is called ……

Choose the correct answer:

6. The objective function for LP model is $3x_1+2x_2$, If $x_1=20$, $x_2=30$, What is the value of objective function?

   a) 50 b) 0 c) 60 d) 20

7. When the total supply is not equal to total in a transportation problem then it is called

   a) Balanced b) Unbalanced d) Degenerate d) None of these

8. The problem of replacement is felt when job performing units fall

   a) Suddenly b) Gradually c) (a) and (b) both d) None of these

9. The another term commonly used for activity slack time is

   a) Total float b) free float c) independent float d) all of the above

10. To find the optimum route …… is used

    a) Transportation b) Assignment c) PERT-CPM d) All of the above

(10 x 1 = 10 Marks)

Part B

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

11. What are the properties of game theory?
12. What is Crashing?
13. What is Float and Slack?

14. What do you meant by critical path?
15. What is saddle point?
16. Solve the following LP problem graphically

    Maximize Z = -x + 2y

    Subject to the Constraints

$$x - y \leq -1$$
$$-0.5x + y \leq 2 \text{ and}$$
$$x, y \leq 0$$

17. What is a decision tree? Explain its use.
18. What is schedule graph with respect to networks?
19. The IOC Manager must decide on the optimum mix of two possible blending process of which the inputs and out puts per production run is as follows:

Process	Input		Out put	
	Grade **A**	Grade B	Gasoline X	Gasoline Y
1	6	4	6	9
2	5	6	5	5

The maximum amount available of crudes A and B are 250 and units and 200 units respectively .Market demand shows that at least 150 units of gasoline X and 130 units of Gasoline Y must be produced . The profits per production run from process 1 and Process 2 are Rs 400 and Rs 500 respectively .Formulate the problem for maximizing the profit.

20. What do you meant by Maximax and Minimax Criteria?

(8 x 2 = 16 Marks)

Part C

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

21. Explain the advantages and limitation of OR?
22. Difference between PERT and CPM.
23. Explain the following terms a) EMV b) EVPI c)EOL d)EVPI
24. Differentiate Decision Theory and Decision trees
25. Explain the degeneracy in transportation model.
26. A horse breeder can produce 20 or 30 horses. The total production of his competitors can be either 5000 or 10000 horse .If they produce 5000 horses, his profit per horse is Rs 600, If they produce 10,000 horses, his profit per horse is only Rs 450 Construct a pay-off table and state what should the horse breeder decide?
27. Solve the following transportation problem.

	S1	S2	S3	S4	a_i	
O1	1	2	1	4	30	
O2	3	3	2	1	50	
O3	4	2	5	9	20	
b_j	20	40	30	10		

28. A small project consist of seven activities for which the relevant data are given below:

Activity	Preceding activities	Activity duration (days)
A	-	4
B	-	7
C	-	6
D	A,B	5
E	A,C	7
F	C,D,E	6
G	C,D,E	5

(I) Draw the net work and find the project completion time

(II) Calculate total float for each of the activities.

(6 x 4 = 24 Marks)

Part D

Answer any ***two*** questions. Each question carries 15 marks.

29. A company has 4 warehouses and 6 stores. The surplus in the warehouses, the requirement s of the stores and costs (in Rs) of the transportation one unit of the commodity from warehouse *i* to stores *j* are given below . How the commodity should be transported so that the total transportation cost is a minimum .obtain the initial basic feasible solution by North –West corner rule.

Store warehouse	1	2	3	4	5	6	Surplus
1	6	5	9	5	10	7	30
2	7	8	14	7	9	13	40
3	4	10	5	6	10	4	20
4	11	8	12	7	12	11	80
Requirement	30	30	60	20	10	20	170

Turn Over