C 80797 (Pages : 4) Name.....

Reg. No.....

FOURTH SEMESTER B.Com./B.B.A. DEGREE EXAMINATION, APRIL 2020

(CUCBCSS—UG)

B.B.A.

BBA IVC 04—MANAGEMENT SCIENCE

Time : Three Hours Maximum : 80 Marks

Part I

Answer **all** *questions.*

Each question carries 1 *mark.*

1. The model in which one set of properties is used to represent other set of properties are called _____.

   (a) Iconic model. (b) Physical model.

   (c) Analogue model. (d) Mathematical model.

2. If one event happens to be the beginning event of two or more activities, it is defined as _____.

   (a) Burst event. (b) Merge event.

   (c) Successor event. (d) Predecessor event.

3. _____ is a position in the pay off matrix where the maximum of raw minima coincide with the minimum of column maxima.

   (a) Saddle point. (b) Pay-off.

   (c) Strategy. (d) Optimum point.

4. From the following which one is not a transportation problem method :

   (a) North west corner method. (b) Least cost method.

   (c) Hurwics alpha criterion. (d) Vogels approximation method.

5. When a decision maker chooses from among several possible options whose possibilities of occurrence can be stated, he is said to take :

   (a) Decision under risk. (b) Decision under certainty.

   (c) Decision under uncertainty. (d) All the above.

6. Set of rules or alternative course of action available to the player in advance is known as _____.

   (a) Pay-off. (b) Value.

   (c) Criterion. (d) Strategy.

7. A solution which satisfies all the constraints is known as :

(a) Feasible solution.
(b) Optimal solution.
(c) Linearity.
(d) None of the above.

8. That portion of total float that can be used by an activity without delaying any succeeding activity is known as _____.

(a) Independent float.
(b) Free float.
(c) Interfering float.
(d) Slack.

9. The maximization or minimization of quantity is the :

(a) Goal of management science.
(b) Decision for decision analysis.
(c) Constraint of operations research.
(d) Objective of linear programming.

10. Operations research simply helps in improving _____ of the solution but does not in a perfect solution

(a) Quality.
(b) Clarity.
(c) Function.
(d) All the above.

(10 × 1 = 10 marks)

Part II (Short Essay Questions)

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

11. What is Pay-off ?
12. What are the errors in network construction ?
13. What are the advantages of a model ?
14. What are the features of a game ?
15. What is expected value of perfect information ?
16. What is a transportation problem ?
17. What is a dummy activity ?
18. Define LPP.
19. What are the different phases in network techniques.
20. What are the time estimates associated with PERT ?

(8 × 2 = 16 marks)

Part III

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

21. Discuss the phases in OR.
22. Explain the rules in the construction of network diagram.
23. What are assumptions of LPP ?
24. Describe the decision making process.
25. What are the choices available to decision maker in situations of uncertainty ?
26. Formulate LPP.

    An animal feed Company must produce at least 200 kg of mixture consisting of ingredients $x1$ and $x2$ daily. X1 costs Rs. 3 per kg and $x2$. Rs. 8 per kg. No more than 80 kg of $x1$ can be used and atleast 60 kg of $x2$ must be used.

27. Construct a network diagram :

Activities	Preceeding activities
A	–
B	–
C	A
D	A
E	B, c
F	B, c
G	B, c
H	D, E
I	F
J	F
K	G
L	H.I
M	H, I
N	J, K, L

28. A company has factories at F_1, F_2 and F_3 which supply warehouses at W_1, W_2 and W_3. Weekly factory capacities are 200,160 and 90 units respectively. Weekly warehouse requirements are 180, 120, and 150 units respectively, unit shipping costs in Rs. are as under :

Factory	Warehouse			
	W_1	W_2	W_3	Supply
F_1	16	20	12	200
F_2	14	8	18	160
F_3	26	24	16	90
Demand	180	120	150	350

Determine the optimum distribution for this company to minimize shipping cost.

(6 × 4 = 24 marks)

Turn over

Part IV (Long Essays)

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

29. For a project given below find : (a) Expected time for each activity ; (b) EST, EFT, LST, LFT for activities ; (c) Critical path ; (d) Float.

Task	:	A	B	C	D	E	F	G	H	I	J	K
Least time	:	4	5	8	2	4	7	8	4	3	5	6
Greatest time	:	6	9	12	6	10	15	16	8	7	11	12
Most likely time	:	5	7	10	4	7	8	12	6	5	8	9

30. Solve LPP graphically :

Maximize $Z = 80X_1 + 120X_2$
subject to $X_1 + X_2 \leq 9$
$X_1 \geq 2$
$X_2 \geq 3$
$20X_1 + 50X_2 \leq 360$
$X_1, X_2 \geq 0.$

31. A super bazar must decide on the level of supplies it must stock to meet the needs of its customers during Diwali days. The exact number of customers is not known, but it is expected to be one of the 4 categories, 300, 350, 400 or 450 customers. Four levels of supplies are thus suggested with level *j* being ideal (from the view point of incurred costs) if the number of customers falls in category *j*. Deviations from the ideal level results in additional costs either because extra supplies stocked needlessly or because demand cannot be satisfied. The table below provides these costs in thousands of rupee :

Customer category	Supplies level			
	A_1	A_2	A_3	A_4
E_1	7	12	20	27
E_2	10	9	10	25
E_3	23	20	14	23
E_4	32	24	21	17

Apply Laplace principle

(2 × 15 = 30 marks)