C 20480 **(Pages : 4)** **Name.....**

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

B.B.A.

BBA 6B 13—MANAGEMENT SCIENCE

(2019 Admissions)

Time : Two Hours and a Half Maximum : 80 Marks

Section A

Answer at least **ten** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 30.

1. What are Stochastic Models ?
2. What is non-negativity integer in LPP ?
3. Explain minimax criterion.
4. What is Independent Float ?
5. Explain EOL.
6. What is constraints in LPP ?
7. What is non-zero sum game ?
8. Explain decision node decision tree.
9. Explain optimal solution in LPP.
10. What is Decision trees ?
11. What is mixed strategy ?
12. What is Float ?
13. State any *two* uses of network analysis.
14. Write the feature of decision under uncertainty.
15. What is PERT ?

(10 × 3 = 30 marks)

Turn over

Section B

Answer at least **five** *questions.*
Each question carries 6 *marks.*
All questions can be attended.
Overall Ceiling 30.

16. Discuss the applications area of Operations Research.

17. State Application of Linear Programming problem.

18. Discuss the difference between PERT and CPM.

19. Explain the methods of finding the initial feasible solution in transportation problem.

20. Draw a network diagram based on the following project schedule infirmation available and find the project duration :

S.No.	Activity	Immediate Activity	Predecessor Time
1	A	–	2
2	B	–	4
3	C	A	6
4	D	B	5
5	E	C, D	8
6	F	E	3
7	G	F	2

21. From the following Pay-off tables find the suitable strategy by using :

Alternatives	States of nature			
	S1	S2	S3	S4
A1	3	5	8	– 1
A2	6	5	2	0
A3	0	5	6	4

a) Maximax ;

b) Maximin ; and

c) Minimax regret.

22. Use the graphical method to solve the following LP problem :

Minimize $Z = 3x_1 + 2x_2$

subject to constraints,

$$5x_1 + x_2 \geq 10$$
$$x_1 + x_2 \geq 6$$
$$x_1 + 4x_2 \geq 12$$
$$x_1, x_2 \geq 0.$$

23. Determine an initial basic feasible solution to the following transportation problem by using VAM

		Destination				
		D1	D2	D3	D4	Supply
Source	A	11	13	17	14	250
	B	16	18	14	10	300
	C	21	24	13	10	400
	Demand	200	225	275	250	

(5 × 6 = 30 marks)

Section C

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

24. The Anita Electric Company produces two products P1 and P2. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product P1 and 35 for product P2 because of limited available facilities. The company employs total of 60 workers. Product P1 requires 2 man-weeks of labour, while P2 requires one man-week of labour. Profit margin on P1 is Rs. 60 and on P2 is Rs. 40. Formulate this problem as an LP problem and solve that using graphical method.

25. The time estimates (in hours) for the activities of a PERT network are given below :

Activity	t_0	t_m	t_p
1–2	1	1	7
1–3	1	4	7
1–4	2	2	8
2–5	1	1	1

Turn over

Activity	t_0	t_m	t_p
3–5	2	5	14
4–6	2	5	8
5–6	3	6	15

(a) Draw the project network ;

(b) Identify all paths through it and write critical path ; and

(c) Determine the expected project length and standard deviation.

26. From the following table find :

a) Expected Monetary Value (EMV) ;

b) Expected Opportunity Loss (EOL) ; and

c) Expected Value of Perfect Information (EVPI).

P (S1) = 0.6 , P (S2) = 0.1 , P (S3) = 0.2 , P (S4) = 0.1

Alternatives	States of nature			
	S1	S2	S3	S4
A1	3	5	8	– 1
A2	6	5	2	0
A3	0	5	6	4
Probability	0.6	0.1	0.2	0.1

27. Discuss the models of Operations Research.

(2 × 10 = 20 marks)