Printed Pages – 4	(2)
M-5347	Q. 2. (a) State Bellman's principle of optimality in
M.A./M.Sc. (IV th Semester)	dynamic programming and explain it. 4
Examination, 2020	(b) Solve following LPP by using dynamic
MATHEMATICS	programming technique : 10
(Operation Research - II)	Max. $z = x_1 + 9x_2$
Time Allowed : Three Hours Maximum Marks : 70	s.t.
Note: Attempt one question from each unit. The figures	$2x_1 + x_2 \le 25$
in the right hand margin indicates marks.	$x_2 \le 11$
Unit–I	$x_1^{} \geq 0, \; x_2^{} \geq 0$
Q. 1. (a) Write characteristics of Dynamic	Unit–II
Progamming Problem. 4	Q. 3. (a) Solve the following game : 4
(b) By using dynamic programming technique	A I 6 8 6
solve the problem : 10	A I 6 8 6 II 4 12 2
Max. $z = x_1, x_2 \dots x_n$	(b) Solve following game graphically : 10
such that	В
$x_1 + x_2 + \dots + x_n = k$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$x_i \ge 0, i = 1, 2 \dots n$	II 4 3 2 6

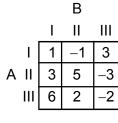
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P.T.O.

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(3)

- Q. 4. (a) Explain the minmax-maxmin principle for mixed strategy game.4
 - (b) Solve following game by linear programming : 10





Q. 5. Use Branch and Bound technique solve : 14

Maximize $z = 7x_1 + 9x_2$

s.t.

$$-x_1 + 3x_2 \le 6$$

$$7x_1 + x_2 \le 35$$

$$0 \le x_1, x_2 \le 7$$

 x_1, x_2 are integers

- **Q. 6.** Describe Branch and Bound Technique to solve
 - an integer programming problem.

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Unit–IV

- Q. 7. Write a brief note on blending problems. 14
 Q. 8. Explain Input-Output analysis in brief. 14
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Unit-V

- Q. 9. (a) Write a note on convex progamming. 7
 - (b) Write a note on separable programming. 7
- Q. 10. Using Kuhn-Tucker conditions solve following
 NLPP : 14

Minimize $z = (x_1 - 2)^2 + (x_2 - 1)^2$

s.t.

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 $\label{eq:1.1} \begin{array}{l} x_{1}^{2}-\,x_{2}\,\leq\,0\\ \\ x_{1}\,+\,x_{2}\,\leq\,2\\ \\ \text{and} \ x_{1},\,x_{2}\,\geq\,0 \end{array}$