



PPD-1674 Seat No. _____

B. Sc. (Sem. II) Examination

April / May - 2016

ES MAT-12 : Mathematics

(Industrial Mathematics)

Time : 2 Hours]

[Total Marks : 50

- Instructions :** (1) All questions are compulsory.
(2) Figures to the right indicate the marks of the corresponding question.

- 1 (a) Explain the theory of dominance in the solution of rectangular games. 6

OR

- (a) State and Prove Fundamental theorem of Game theory.
- (b) Attempt any three. 14
- (1) Solve the following game by graphical method :

	B_1	B_2	B_3	B_4
A_1	2	2	3	-2
A_2	4	3	2	6

(2) Solve the following game :

Player A	Player B			
	B_1	B_2	B_3	B_4
A_1	3	-5	0	6
A_2	-4	-2	1	2
A_3	5	4	2	3

(3) Solve by dominance principle :

Player A	Player B		
	B_1	B_2	B_3
A_1	5	8	7
A_2	7	8	5
A_3	6	9	12
A_4	6	7	6

(4) Explain the difference between pure strategy and mixed strategy .

2 (a) Write a short note on different types of replacement models. 6

OR

(a) Write a short note on replacement problems .

(b) Attempt any three : 14

(1) The cost of a machine is Rs. 5000. The running cost and the salvage value of the machine are given as under. Find the optimal replacement policy.

Year	1	2	3	4	5	6	7	8
Running cost (Rs.)	1500	1600	1800	2100	2500	2900	3400	4000
Salvage Value (Rs.)	350	2500	1700	1200	800	500	500	500

Salvage value means the cost at which the machine could be sold at the end of the year.

- (2) What is replacement ? Describe some important replacement situations.
- (3) Give two examples of gradual failure.
- (4) Explain with examples the failure mechanism of items.

3 Attempt any three :

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- (1) Define :
 - (i) Strategies
 - (ii) Pay off matrix
 - (iii) Two-person zero-sum game.
- (2) How many types of strategies are employed by player in a game? List their names.
- (3) Write a short note on staffing problem.
- (4) What is group replacement Policy. Explain it.