2. Find out the minimum spanning tree from the following network. 10

3. Find out the fundamental matrix, time to absorption and probability of absorption from the Markov chain represented by following one step transition probability matrix. 4+2+4=10

$$P = \begin{array}{c|cccccc} & A & B & C & D & E & F \\ \hline A & 0.2 & 0.1 & 0 & 0.5 & 0.2 & 0 \\ B & 0 & 0.1 & 0.4 & 0.1 & 0.2 & 0.2 \\ C & 0 & 0 & 1 & 0 & 0 & 0 \\ D & 0 & 0 & 0 & 1 & 0 & 0 \\ E & 0.1 & 0.2 & 0 & 0.4 & 0.3 & 0 \\ F & 0 & 0 & 0 & 0 & 0 & 1 \end{array}$$

4. Solve the following problem.

Maximise $Z = 3X_1 + 2X_2$

Subject to $2X_1 + 2X_2 \leq 5$

$3X_1 + 4X_2 \ 10$

and $X_1, X_2 >= 0$ and are integers.

(Stop after 6 tables if the problem is not solved till then).

MASTER OF ARTS EXAMINATION, 2023

(2nd Year, 1st Semester)

ECONOMICS

[OPERATION RESEARCH]

Time : Two Hours   Full Marks : 30

Answer any **three** questions.   10x3=30

1. (a) Define a tree. Check whether the following network is a tree or not. Give reasons for your answer.

   (b) Define a complete bipartite network. Check whether the following network is a complete bipartite network or not. Give reasons for your answer.

   (2+2)+(2+4)=10