

University of Technology Sydney
School of Mathematical and Physical Sciences

Probability and Random Variables (37161) –
 Class 11 Preparation Work

1.

- a) Draw the state diagram corresponding to the transition matrix

$$P = \begin{pmatrix} 0 & 0.3 & 0 & 0.4 & 0.3 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$$

- b) Which of the states are absorbing?
 c) Find the period of each of the six states.

2.

- a) Which of the states in the Markov Chain represented by the state diagram below are:

- i) persistent;
 ii) absorbing;
 iii) transient?

- b) Find the period of each of the eight states (recall that an aperiodic state has period 1.)

