Question 13 **(8 marks)**

The proportion of working adults who miss breakfast on week days is estimated to be 40%. A study takes a random sample of 400 working adults.

(a) For this sample:

(i) What is the (approximate) distribution of the sample proportion of workers who miss breakfast? (2 marks)

(ii) What is the probability that the sample proportion of workers who miss breakfast is greater than 44%? (2 marks)

Tom takes a random sample of 400 adults. He obtained his sample by selecting the first 400 workers he met in a busy mall in Perth city during lunch time.

(b) Discuss briefly **two** possible sources of bias in Tom's sample. (2 marks)

Amir suggests that a better sampling scheme is to obtain a random sample of 400 voters and contact them by telephone.

(c) (i) Outline **one** source of bias in Amir's sampling scheme. (1 mark)

(ii) Which of Tom's or Amir's sampling scheme is better? Provide a reason for your choice. (1 mark)