Probability – 2021/20 GCE Statistics Mathematics A

1. Nov/2021/Paper_H240/02/No.12

Anika and Beth are playing a game which consists of several points.

- The probability that Anika will win any point is 0.7.
- The probability that Beth will win any point is 0.3.
- The outcome of each point is independent of the outcome of every other point.

The first player to win two points wins the game.

(a) Write down the probability that the game consists of more than three points. **[1]**

(b) Complete the probability tree diagram in the Printed Answer Booklet showing all the possibilities for the game. **[3]**

(c) Determine the probability that Beth wins the game. **[3]**

(d) Determine the probability that the game consists of exactly three points. **[2]**

(e) Given that Beth wins the game, determine the probability that the game consists of exactly three points. **[4]**

2. Nov/2020/Paper_H240/02/No.13

Andy and Bev are playing a game.

- The game consists of three points.
- On each point, P(Andy wins) = 0.4 and P(Bev wins) = 0.6.
- If one player wins two consecutive points, then they win the game, otherwise neither player wins.

(a) Determine the probability of the following events.

(i) Andy wins the game. **[2]**

(ii) Neither player wins the game. **[3]**

Andy and Bev now decide to play a match which consists of a series of games.

- In each game, if a player wins the game then they win the match.
- If neither player wins the game then the players play another game.

(b) Determine the probability that Andy wins the match. **[3]**