

### Question 11

- (a) The code to open a combination lock is an ordered sequence of four digits chosen from the set  $\{1, 2, 3, 4, 5, 6\}$ . How many different codes are possible
- (i) if repetition is allowed?
  - (ii) if repetition is not allowed? [2]
- (b) Twelve balls numbered  $1, 2, 3, \dots, 12$ , are placed in a container and three balls are drawn at random without replacement. How many different selections of three balls are possible, if the order of selection is not important? [2]
- (c) In the experiment described in part (b), let  $A$  be the event that the number on each ball drawn is at most 5. Let  $B$  be the event that the number on each ball drawn is odd. Calculate the probability of each of the events  $A$ ,  $B$  and  $A \cap B$ . [6]