

6. The Venn diagram, where  $p$ ,  $q$  and  $r$  are probabilities, shows the events  $A$ ,  $B$ ,  $C$  and  $D$  and associated probabilities.
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- (a) State any pair of mutually exclusive events from  $A$ ,  $B$ ,  $C$  and  $D$
- (1)
- The events  $B$  and  $C$  are independent.
- (b) Find the value of  $p$
- (2)
- (c) Find the greatest possible value of  $P(A \mid B')$
- (3)
- Given that  $P(B \mid A') = 0.5$
- (d) find the value of  $q$  and the value of  $r$
- (3)
- (e) Find  $P\left([A \cup B]' \cap C\right)$
- (1)
- (f) Use set notation to write an expression for the event with probability  $p$
- (1)