

KENYATTA UNIVERSITY

SCO 108 : DISCRETE MATHEMATICS FOR COMPUTER SCIENCE

- a) Let $W = \{1, 2, \dots, 8\}$, $Q = \{2, 4, 6, 8, 10\}$, $Y = \{1, 2, 4, 5, 6, 8, 9\}$. Evaluate:
- i. $W \setminus Y$ (2 marks)
 - ii. $Q \cap Q$ (2 marks)
 - iii. $|P(Y)|$ (2 marks)
 - iv. $(W \cap Q) \times Y$ (2 marks)
- b) Use Venn diagram to illustrate the set
- i. $[A \setminus (C \cap B)]^c$ (2 marks)
 - ii. $A \cap (B \setminus C)^c$ (2 marks)
- c) Draw the truth tables for $(\sim (p \vee q)) \leftrightarrow (p \wedge (r \rightarrow k))$ (8 marks)
- d) Out of 300 students taking discrete mathematics, 60 take coffee, 27 take cocoa, 36 take tea, 17 take tea only, 47 take chocolate only, 7 take chocolate and cocoa, 3 take chocolate, tea and cocoa, 20 take cocoa only, 2 take tea, coffee and chocolate, 30 take coffee only, 9 take tea and chocolate whereas 12 take tea and coffee.
- i. Express this information on a Venn diagram. (6 marks)
 - ii. Find how many take any beverage. (2 marks)
 - iii. Find how many take Fanta. Why? (2 marks)