SECI1013: DISCRETE STRUCTURE
SEM 1 2023/2024

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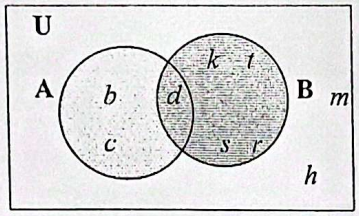
Marks 15 / 15

Question 1 **[6 Marks]**

Given the Venn Diagram, answer the following questions:



a. List the elements of set A, B. (2 m)

A = {b, c, d}
B = {d, k, r, s, t}

b. Find |U| 9 (1 m)

c. List **ALL** the subsets of A. (3 m)

{b}, {c}, {d}, {b, c}, {b, d}, {c, d}, {b, c, d}, { }

Question 2 **[6 Marks]**

Given U = $\{x \in Z, 0 \overset{1-10}{<} x \leq 10\}$, $A = \{1,3,5,7,9\}$, $B = \{2,4,6,8\}$, $C = \{3,6,9\}$. Find:

a. $(A \cup B) \cap C$ $\{1,2,3,4,5,6,7,8,9\} \cap \{3,6,9\} = \{3,6,9\}$ (1 m)

b. $A' - B$ $\{2,4,6,8,10\} - \{2,4,6,8\} = \{10\}$ (1 m)

c. $B' \cap (U \cap C')$ $\{1,3,5,7,9,10\} \cap \{1,2,4,5,7,8,10\} = \{1,5,7,10\}$ (2 m)

d. $(A \cap C) \times (C - A) \times \{a\}$ $\{3,9\} \times \{6\} \times \{a\} = \{3,6,a\}, \{9,6,a\}$ (2 m)

Question 3 **[3 Marks]**

Given the following propositions, answer the following questions:

p: $(x+1)/3$
q: x is odd integer

a. Write a compound proposition using logical connectives for the statement:

(x+1) / 3 if and only if x is not odd integer $p \leftrightarrow \neg q$ (1 m)

b. Construct the truth table for the compound proposition in (a) (2 m)

p	q	¬q	p↔¬q
T	T	F	F
T	F	T	T
F	T	F	T
F	F	T	F