Assignment-IST

Instructions

- Write your information (name, id, section department etc.) on the front page.
- Submit a PDF version of this file using the link : https://forms.gle/4devZDwgeYVFtTym7 by the mentioned date.
- Name your pdf file as "YourName_ID". e.g., Raj_1022

Deadline: within 26/11/2024

Solve all the problems:

1. If $A = \{7, 8\}$, then can we say $\{7\} \subset P(A)$?
2. If $A = \{2, 3\}$, then can we say $\{3\} \subset P(A)$?
3. What is the total number of subsets of a set with 6 elements?
4. How many elements are in the power set of $\{a, b, c, d\}$?
5. Find the number of elements in the power set of $\{x, y, z, w, v\}$.
6. If $K = \{x : x$ is a letter in the word COMPUTER$\}$ and $L = \{y : y$ is a letter in the word PROGRAM$\}$, calculate $K \cup L$.
7. If $A = \{x : x$ is a letter in the word STRESSED$\}$ and $B = \{y : y$ is a letter in the word DESSERTS$\}$, then what is $A \cap B$?
8. Find $A - B$, given $A = \{x : x$ is a letter in the word STRESSED$\}$ and $B = \{y : y$ is a letter in the word DESSERTS$\}$.
9. Find the number of subsets of $C = \{x : x \in \mathbb{Z},\ 0 \leq x \leq 4\}$.
10. If $A = \{x : x \in \mathbb{Z},\ 1 \leq x \leq 5\}$, what is the size of the power set $P(A)$?
11. If $U = \{x : x \in \mathbb{Z}$ and $1 \leq x \leq 10\}$, $A = \{x : x \in U$ and x is a prime number$\}$, $B = \{x : x \in U$ and x is even$\}$, find $A \Delta B$.
12. If $U = \{x : x \in \mathbb{Z}$ and $1 \leq x \leq 15\}$, $A = \{x : x \in U$ and x is odd$\}$, $B = \{x : x \in U$ and x is a multiple of 3$\}$, find $A \cap B$.
13. Let $A = \{x \mid x$ is an integer and $x \geq 4\}$ and $B = \{x \mid x$ is an integer and $-2 \leq x \leq 8\}$. Find $A \cup B$ and $A \cap B$.
14. Verify that $(E \cup F) \cap (E \cup F') = E$, where $E = \{x \mid x$ is an integer and $x \geq -3\}$ and $F = \{x \mid x$ is an integer and $-5 \leq x \leq 3\}$.
15. Verify that $(A \cup B) \cap (A \cup B') = A$, where $A = \{x \mid x$ is an integer and $x \geq 4\}$ and $B = \{x \mid x$ is an integer and $-2 \leq x \leq 8\}$.