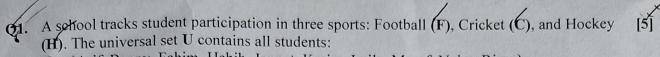
CSE212 – Discrete Mathematics Quiz-2 Section 66 J

Marks: 15

Section: 66_J Time: 30 Minutes



U = {Arif, Bappy, Fahim, Habib, Jannat, Karim, Laila, Maruf, Naim, Rima}.

The sports teams are:

Football (F): {Arif, Bappy, Fahim, Jannat} Cricket (C): {Bappy, Fahim, Habib, Karim} Hockey (H): {Fahim, Habib, Laila, Maruf}

- a) Draw a single Venn diagram representing these sets and their relationships.
- b) Perform the following set operations:
 - i. (FUC)∩H
 - ii. $(F \cap C) \cup (H \cap F)$
 - iii. (FUH)∩(CUH)
- Q2. A survey of 150 students asked about their preferences for three extracurricular activities: [5] Chess, Drama, and Painting. The results showed:
 - 80 students participate in Chess
 - 70 students participate in Drama!
 - 60 students participate in Painting.
 - 35 students participate in both Chess and Drama.
 - 30 students participate in both Drama and Painting
 - 25 students participate in both Chess and Painting.
 - 15 students participate in all three activities.
 - a) Determine how many students participate in Drama only.
 - b) Determine how many students don't participate in any of the activities.

Q3. Let
$$A = \{1, 2, 3, 4, 5\}$$
 and a fraction $f: A \rightarrow Z$ is defined as follows: [5] $f(x) = 3x - 1$

Now answer the following with justification.

- a) Is f a one-to-one function?
- b) Is f an onto function?
- c) If f has an inverse function, find its inverse function $f^1: Z \to A$.

Let
$$A = \{1,2,3,4,5\}$$
 and a function $f: A \rightarrow Z$ be defined as:
 $f(x) = 4x + 2$

- a) Is f a one-to-one (injective) function? Justify your answer.
- b) Is f an onto (surjective) function? Justify your answer.
- c) If f has an inverse function, find its inverse $f^1: Z \to A$.