



Bahria University, Islamabad Campus
Department of Computer Science
Quiz # 2
Class: BSIT-2A & 2B
(Fall 2019 Semester)

Course: Discrete Mathematics

Date: 24/10/2019

Time Allowed: 20 mins

Total Marks: 10

Name: _____

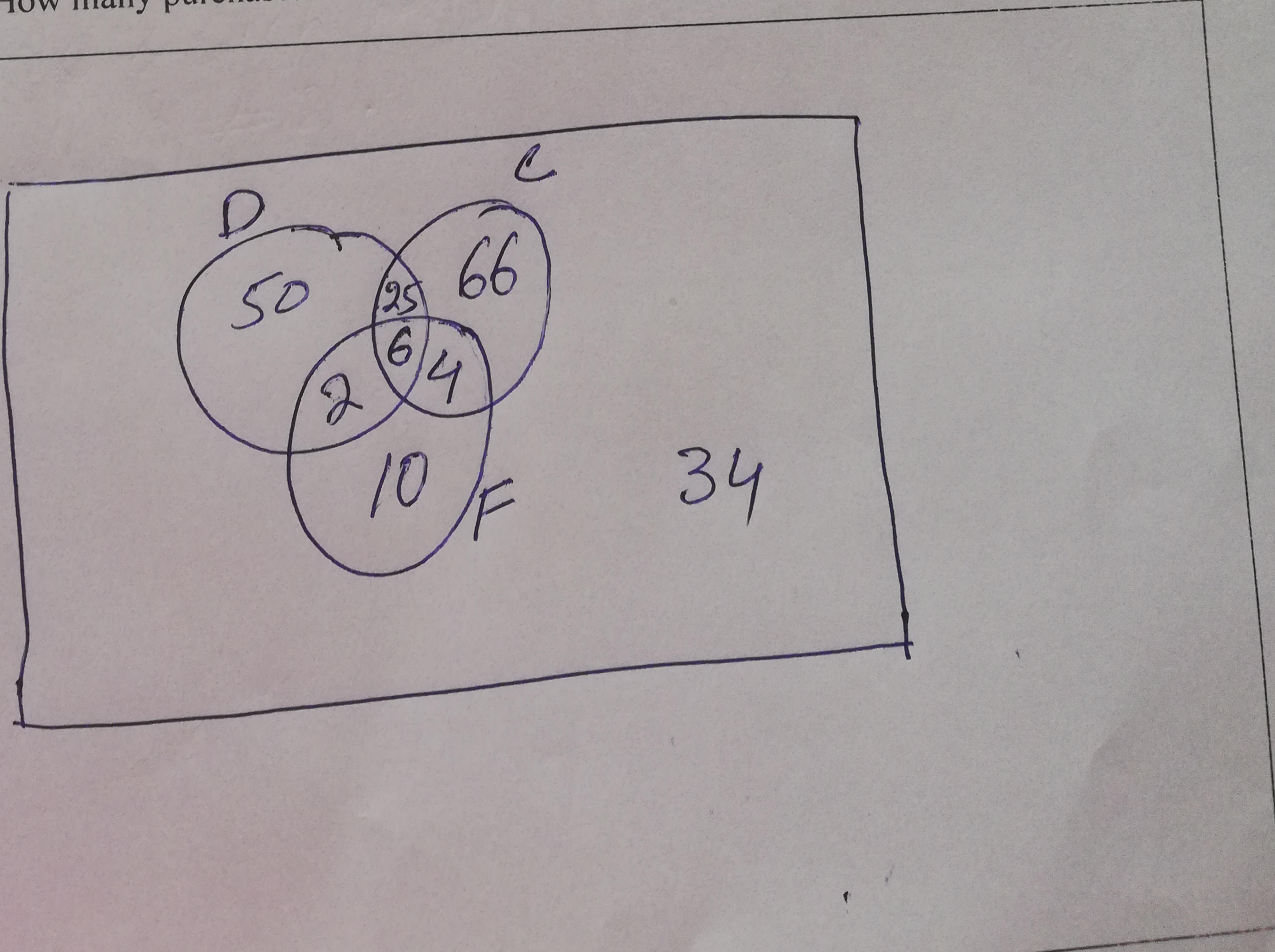
Enrolment #: _____

Question # 01

(06)

A pet store keeps track of the purchases of customers over a four-hour period. The store manager classifies purchases as containing a dog product, a cat product, a fish product, or product for a different kind of pet. She found 83 purchased a dog product, 101 purchased a cat product, 22 purchased a fish product, 31 purchased a dog and a cat product, 8 purchased a dog and a fish product, 10 purchased a cat and a fish product, 6 purchased a dog, a cat and a fish product and 34 purchased a product for a pet other than a dog, cat or fish. Represent this information in a Venn diagram and answer the following questions.

- How many purchases were for a dog product only? 50
- How many purchases were for a cat product only? 66
- How many purchases were for a dog or a fish product? $50 + 25 + 6 + 2 + 4 + 10 = 97$
- How many purchases were there in total? $50 + 25 + 6 + 66 + 4 + 2 + 10 + 34 = 197$



(04)

Question # 02

- a. Rewrite the following statements in the two forms " $\exists \underline{\quad} x$ such that $\underline{\quad}$ " and " $\exists x$ such that $\underline{\quad}$ and $\underline{\quad}$ ".

- i. Some hatters are mad.
- ii. Some questions are easy

- b. Write a negation for the following statements.

- i. $\forall x \in \mathbb{R}$, if $x(x+1) > 0$ then $x > 0$ or $x < -1$.
- ii. $\forall n \in \mathbb{Z}$, if n is prime then n is odd or $n = 2$.

- a)
- i) \exists a hatter x such that x is mad. and $\exists x$ such that x is a hatter and x is mad.
 - ii) \exists a question x such that x is easy and $\exists x$ such that x is a question and x is easy.
- b)
- i) $\exists x \in \mathbb{R}$ such that $x(x+1) > 0$ and $x \leq 0$ and $x \geq -1$.
 - ii) $\exists n \in \mathbb{Z}$ such that n is prime and n is even and $n \neq 2$.