Invalid truth table

Premises: If i oversleep, then I'll be late for school.

I am late for school.

Conclusion: I overslept

p: I over slept q: I am late

p	q	$p \to q$	$(p \to q) \wedge q$	$[(p \to q) \wedge q] \to p$
T	T	T	T	T
T	F	F	F	T
F	T	T	T	F
F	F	T	F	T

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NAME :HAMID KHAN

ROLL NUMBER:15730

SEMESTER:2

SECTION:A

SOFTWARE ENGINEERING:DISCRETE PAPER

Q1.A)EXPLAIN THE CONCEPT OF BICONDITIONAL STATEMENT.

ANS)A biconditional statement is a combination of a conditional statement and its converse written in the if and only if form.Two line segments are congruent if and only if they are of equal length.It is a combination of two conditional statements, “if two line segments are congruent then they are of equal length” and “if two line segments are of equal length then they are congruent”.

A biconditional is true if and only if both the conditionals are true.

Bi-conditionals are represented by the symbol ↔ or ⇔ .$p \leftrightarrow q$ means that $p \rightarrow q$ and $q \rightarrow p$. That is, $p \leftrightarrow q = (p \rightarrow q) \wedge (q \rightarrow p)$.

B)

conjunction (and) ∧, disjunction (or) ∨, denial (not) ¬, conditional (if - then) ⇒ and double conditional (if and only if, iff) ⇔

ANS) Sam had pizza last night if and only if Chris finished her homework . p⇔q

2) Pat watched the news this morning iff Sam did not have pizza last night. r⇔¬p

3) Pat watched the news this morning if and only if Chris finished her homework and Sam did not have pizza last night. r⇔(q∧¬p)

4) In order for Pat to watch the news this morning, it is necessary and sufficient that Sam had pizza last night and Chris finished her homework. r⇔(p∧q)

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Chris finished her homework. $r \Leftrightarrow (p \wedge q)$

.....

Q2.LETS P,Q,R REPRESENT THE FOLLOWING STATements

answer)

1.it is sunny if and only if it is hot today.

2.it is hot today iff it is sunny and it is raining.

3.it is hot today iff it is suny or it is raining.

4.it is raining iff it is hot today or it is sunny.

.....

Q3.a)ANSW)ARGUMENT:An argument form, or argument for short, is a sequence of statements. All statements but the last one are called premises or hypotheses. ... An

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Q3.a)ANSW)ARGUMENT:An argument form, or argument for short, is a sequence of statements. All statements but the last one are called premises or hypotheses. ... An argument is valid if the conclusion is true whenever all the premises are true.

EXAMPLE:If P is a premise, we can use Addition rule to derive PVQ

Let P be the proposition, “He studies very hard” is true — "Either he studies very hard Or he is a very bad student." Here Q is the proposition “he is a very bad student”.

VALID ARGUMENT:an argument is valid if the truth of the premises logically guarantees the truth of the conclusion. The following argument is valid, because it is impossible for the premises to be true and the conclusion nevertheless to be false: hamid owns either a

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VALID ARGUMENT:an argument is valid if the truth of the premises logically guarantees the truth of the conclusion. The following argument is valid, because it is impossible for the premises to be true and the conclusion nevertheless to be false: hamid owns either a Honda or corolla.

INVALID ARGUMENT:every argument with true premises and a false conclusion is INVALID. So is every argument for which we can invent a story in which the premises are true and the conclusion false. ... For either example, the logic is invalid but the premises are true. EXAMPLE: if i go fishing the boss will fire me.

.the boss fired me

.therefore,i went fishing

.a true conclusion does not ensure that the argument

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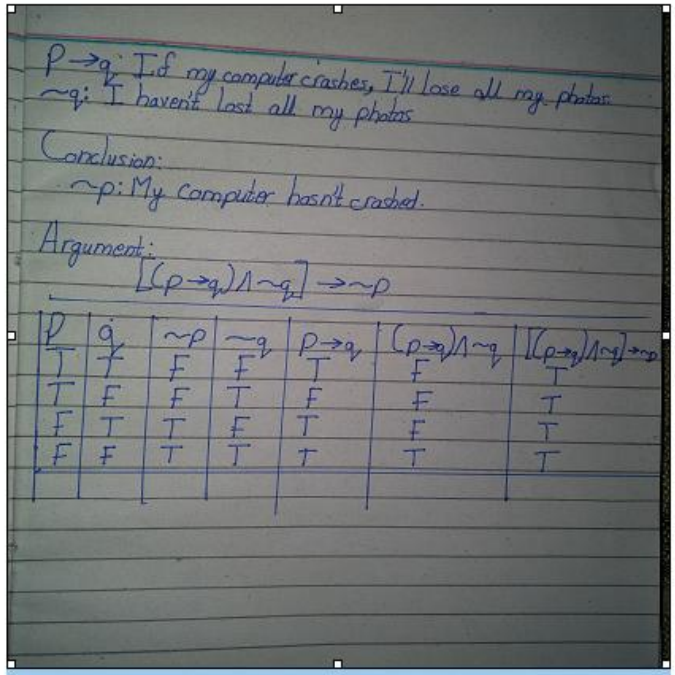
VALID TRUTH TABLE:



p	q	~p	~q	p→q	[(p→q)∧~q]	[(p→q)∧~q]→~p
T	T	F	F	T	F	T
T	F	F	T	F	F	T
F	T	T	F	T	F	T
F	F	T	T	T	T	T

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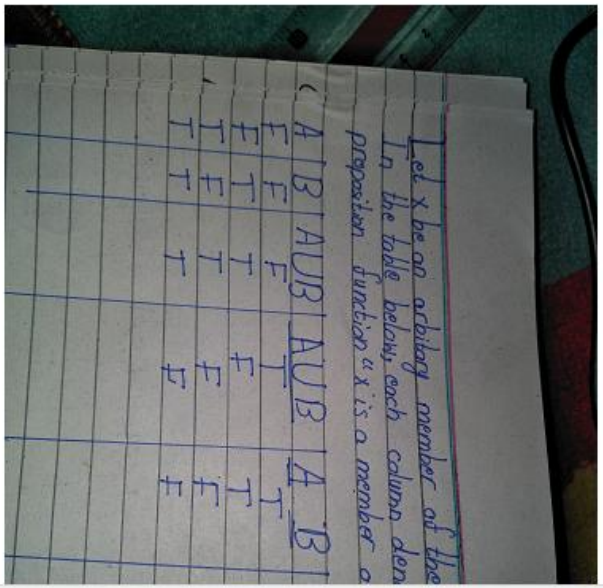
Q4.ANSW)PART A)..UNION:In set theory, the union (denoted by ∪) of a collection of sets is the set of all elements in the collection. It is one of the fundamental operations through which sets can be combined and related to each other.



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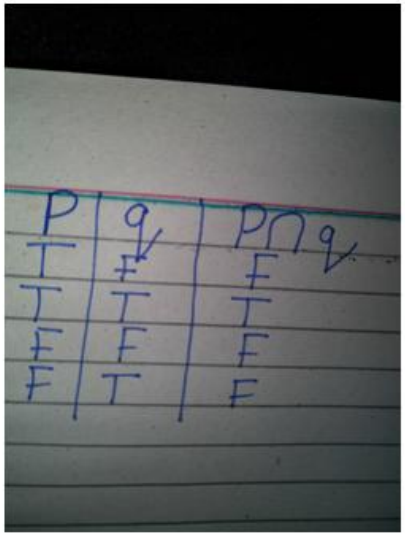
B)INTERSECTION:In mathematics, the intersection of two sets A and B, denoted by A ∩ B, is the set containing all elements of A that also belong to B.



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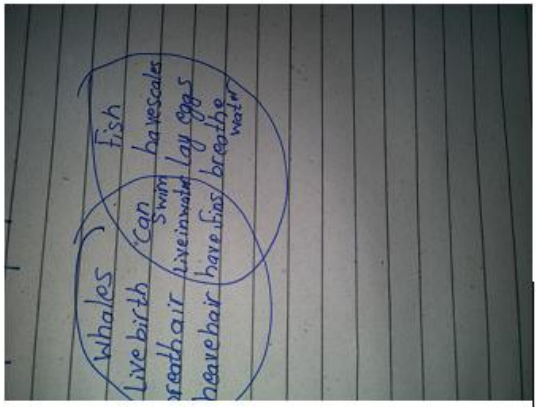
Q5. PART A)CONCEPT OF VENN DIAGRAM:A Venn diagram is an illustration that uses circles to show the relationships among things or finite groups of things. Circles that overlap have a commonality while circles that do not overlap do not share those traits. Venn diagrams help to visually represent the similarities and differences between two concepts.

example:



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B)

ans)

List out the elements of P.

P = {16, 18, 20, 22, 24} 'between' does not include 15 and 25

Draw a circle or oval. Label it P . Put the elements in P

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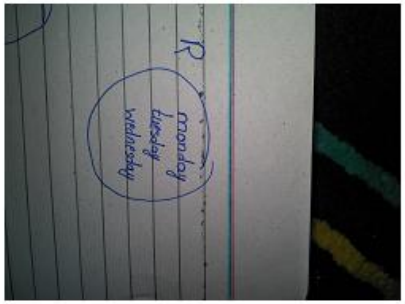
C)draw and label a ven diagram to represent the set
R=monday tuesday wednesday

ans)



D)answer)

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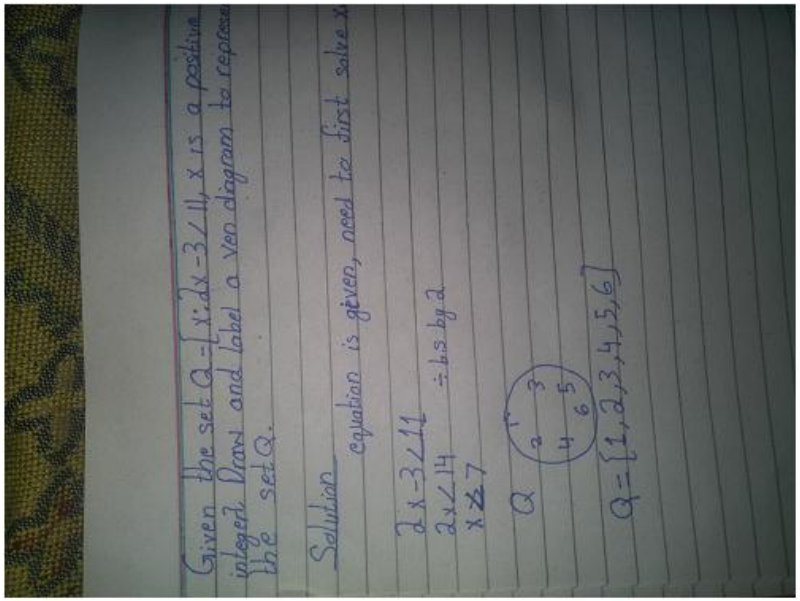
D)answer)



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