

Instructions:

- Hand-written CP Task.
- Submit it to my office.
- Deadline== (28th August-Monday) till 9:30 AM.
- Late submissions are not allowed.

Q1: Determine whether each of the following statements is in propositional logic form (True/False).

1. "The sky is blue."
2. "If it's raining, then the ground is wet."
3. "Penguins can fly if and only if pigs can swim."
4. " $2 + 2 = 5$."
5. "All cats are mammals."

Q2: Convert the following statements into propositional variables:

1. "If the sun is shining and the temperature is warm, then people are happy."
2. "Either the movie is action-packed, or the plot is boring."
3. "Whenever the shop is closed, the lights are off."
4. "You can access the website if you are logged in and have a valid subscription."
5. "Rainy days are cozy, but only if you're indoors."
6. "If it's raining and I have an umbrella, I won't get wet."
7. "The cat is black, but it's not sleeping."
8. "If the store is open, then the lights are on."
9. "I will attend the party if and only if my best friend is also going."
10. "I will buy the car if and only if it's available in blue."

Q3: Solve by using Truth table.

- $(P \wedge Q \rightarrow \sim R) \leftrightarrow (Q \vee R)$

Note:

- Implies (\rightarrow) also called: if ... then
- Bi-conditional (\leftrightarrow) also called: iff/ if and only if