Test 2

650

Ques: 3

$$(\neg A \vee \neg B) \Rightarrow \neg(\neg C \wedge D)$$

$$\because \; p \Rightarrow q \equiv \neg p \vee q$$

$$\neg(\neg A \vee \neg B) \vee \neg(\neg C \wedge D)$$

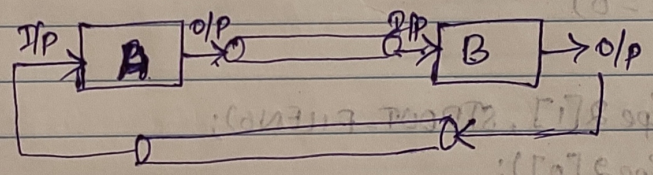
$$\neg(\neg A) \wedge \neg(\neg B) \vee \neg(\neg C) \vee \neg D$$

$$\boxed{\therefore A \wedge B \vee C \vee \neg D}$$

The above is the NNF.

Quest: 2

Execute 2 programs in parallel..,



Pseudocode:- //(taking ref from Assignment 3)

```
int main (int argc, char *argv)
{
    int pipe1[2];
    int pipe2[2];
    pipe(pipe1);
    pipe(pipe2);
    //process A
    pid child = fork();
    if (child == -1)
      {
          stderr " Error: couldnot fork";
          return 1;
      }
```

```
If (child == 0)
{
    dup2(pipe1[1], STDOUT_FILENO); //write output
    close(pipe1[0]);
    close(pipe1[1]);

    dup2(pipe2[0], STDIN_FILENO); //read input
    close(pipe2[0]);
    close(pipe2[1]);

    exec(A);    //execute A
}
//process B
    pid child = fork();
    If (child == -1)
    {
        Std::err" Error: could not fork";
        return 1;
    }
    If (child == 0)
    {
        dup2(pipe2[1], STDOUT_FILENO);
        close(pipe2[0]);
        close(pipe2[1]);
        dup2(pipe1[0], STDIN_FILENO);
        close(pipe1[0]);
        close(pipe1[1]);
        exec(B);    //execute B.
    }
}
```

Question 4:-

Ross own 2 hats :- B & G

Variables

B → "Blue Hat"
G → "Green hat"
S → "Socks"
T → "Tie"
Y → "Yellow Sweater"

~~He always wears either a green hat (or) socks~~
~~(1) G ∨ S~~

Part A:-

(1) $G \vee S$
(2) $G \wedge Y \Rightarrow \neg T$
(3) $\neg(Y \vee S) \Rightarrow \neg G$
(4) $S \Rightarrow Y$
(5) T

(2) $(G \wedge Y) \Rightarrow (\neg T)$

$\therefore P \Rightarrow q \equiv \neg p \vee q$

$\neg(G \wedge Y) \vee \neg T$

$\boxed{\neg G \vee \neg Y \vee \neg T}$

(3) $\neg(Y \vee S) \Rightarrow \neg G$ $\quad \therefore P \Rightarrow q \equiv \neg P \vee q$

$\neg(\neg(Y \vee S)) \vee (\neg G)$

$\neg(\neg Y \wedge \neg S) \vee \neg G$

$\neg\neg Y \vee \neg\neg S \vee \neg G$

$\boxed{Y \vee S \vee \neg G}$

(4) $S \Rightarrow Y$

$\boxed{\neg S \vee Y}$

Part B

(1) $G \vee S$
(2) $\neg G \vee \neg Y \vee \neg T$
(3) $Y \vee S \vee \neg G$
(4) $\neg S \vee Y$
(5) T

(1)+(3) $G \vee S$ $\quad$ $Y \vee S \vee \neg G$

(6)+(4) $\quad$ (6) $S \vee Y$ $\quad$ $\neg S \vee Y$

(7)+(2) $\quad$ (7) $\boxed{Y}$ $\quad$ $\neg G \vee \neg Y \vee \neg T$

(8)+(5) $\quad$ (8) $\neg G \vee \neg T$ $\quad$ T

(9)+(1) $\quad$ (9) $\boxed{\neg G}$ $\quad$ $G \vee S$

(10) $\boxed{S}$

Conclusion:-

As per the deduction,

values are $Y, \neg G, S, T$

which means when ross wore a tie, he didn't wore green hat ($\neg G$) as per (2) statement [$\neg G \vee \neg Y \vee \neg T$]. Adding to that, he wore a yellow sweater and socks

Thus, $Y \wedge \neg G \wedge S \wedge T$.

He wore yellow sweater, socks, tie, but not green hat.