Discrete Mathematics - Problem Session -1

1. united we stand, divided we fall: $P \wedge Q$

2. Someone is sitting in the shade today because someone planted a tree a longtime ago: $\exists x(sitshade(x)) \wedge \exists y(planttree(y))$

3. If you spend your life trying to be good at everything, you will never be great at anything: $\forall x(person(x) \rightarrow (\forall y(thing(y) \rightarrow goodat(x,y)) \rightarrow \forall y(thing(y) \rightarrow \neg greatat(x,y))))$

4. Everybody wants to go to heaven, but nobody wants to die: $\forall x(H(x)) \wedge \neg \exists x(D(x))$

5. Research is to see what everybody else has seen, and to think what nobody else has thought.: $Research \rightarrow (\forall x(seen(x) \wedge think(x) \rightarrow \forall y(y \neq x \rightarrow seen(y) \wedge \neg think(y)))$

6. Everyone wants to walk in shade but no one wants to plant trees.: $\forall x(S(x)) \wedge \neg \exists x(P(x)$

7. A person who never made a mistake never tried anything new: $\forall x((person(x) \wedge \neg mistake(x)) \rightarrow \forall y(newthing(y) \rightarrow \neg try(x,y)))$

8. True knowledge exists in knowing that you know nothing: P

9. If Aug 15 is a holiday, then some students of IIITDM will go home and the rest will solve DM assignment. $P \rightarrow (\exists x(home(x) \wedge \forall y(y \neq x \rightarrow DM(y)))$

10. Write in FOL: There exists at most one x such that $P(x)$. : $\neg \exists x P(x) \vee \exists! x P(x)$

11. Write in FOL: There exists at least three x such that $P(x)$: $\exists x \exists y \exists z(x \neq y \neq z \wedge P(x))$

12. Some thing that is white is not always milk, whereas the milk is always white. $\exists x(W(x) \wedge \neg M(x)) \wedge \forall x(M(x) \rightarrow W(x))$

13. Each student of IIITDM likes either carnatic music or Hindustani music. Further, some students are athletes, however, they have not represented the institute in inter sports meet. Carnatic music is a form of meditation. Music club at IIITDM is not that active. Therefore, students of IIITDM are neither good in sports nor in music. : $(\forall x(C(x) \oplus H(x)) \wedge \exists x(A(x) \wedge \neg I(x)) \wedge C \wedge \neg M) \rightarrow \forall x(\neg S(x) \wedge \neg M(x))$

14. Since it is a Monday, all are back to work.: $M \wedge \forall x(B(x)$

15. While I was walking along the corridor, I met him in the mid way.: $P \wedge Q$

16. As the semester is in full swing, students hardly find time for entertainment.: $P \wedge Q$