8 Logic and Proof (mj201)

(*a*) Present either a proof in sequent calculus or a falsifying interpretation for:

$$\forall x(P(x) \to Q(x)) \to (\exists y(P(y) \wedge R(y)) \to \exists z(Q(z) \wedge R(z)))$$

[11 marks]

(*b*) Draw alphabetically ordered Binary Decision Diagrams (BDDs) for:

$$F_1 = (P \wedge Q) \vee \neg T \text{ and } F_2 = (\neg R \vee \neg S) \wedge (R \vee \neg T).$$

Then draw a BDD for $F_1 \vee F_2$.

[9 marks]