Instructions
- Answer ALL questions. Write your answers in the spaces provided.
- Show your working. You may use a non-programmable scientific calculator.

Question 1

Identify whether each of the following sentence is a proposition.
    (a) What is your uncle's name?
    (b) Stand up!
    (c) $x - 2 = 2$

Question 2

Let p denote "He is rich" and q denote "He is happy". Write each statement in symbolic form using p and q.
    (a) If he is rich, then he is unhappy.
    (b) He is neither rich nor happy.
    (c) He is unhappy if and only if he is poor.
    (d) To be poor is to be unhappy.

Question 3

Construct circuits for this output $\overline{AB(C + D)}\,E$.

Question 4

Given that p is false, q is true and r is true.
Find the truth value of the proposition $(p \rightarrow q) \land (q \rightarrow r) \lor \sim r$