Multi-part question

Answer all parts.

(a) Name at least four different types of ethical theory. [4 marks]

(b) You are building a flight-control system for which a convincing safety case must be made. Would you assign the tasks of safety requirements engineering, test case development and assurance documentation to a separate team, or distribute them among your developers? Justify your answer briefly. [4 marks]

(c) Describe two particular features of ML and two (different) features of Java that might be expected to help the process of designing, implementing, debugging or maintaining high quality programs in a cost effective manner. Explain whether the features you have noted are ones that come into play for all users or if they are capabilities that a user can choose to use or to ignore. [4 marks]

(d) Draw a state diagram for a deterministic finite automaton that accepts $w \in \{a, b\}^*$ if, and only if, $w$ either begins with $a$ and is of odd length or begins with $b$ and is of even length. [4 marks]

(e) A (ROM) Read Only Memory has 8 address inputs and 8 data outputs. Estimate how many two-input gates would be required, on average, to perform the function of the ROM. [4 marks]