1. (a) Explain the four types of reasoning that can be done using probabilistic inference. [4]

   (b) Your friend complains that their computer is slow. When a computer has a virus, this causes it to be slow in 85% of cases. The prior probability of a computer being virus infected is 1/10,000 and the prior probability of a slow computer is 1/500. What is the probability that your friend's computer has a virus? [3]

   (c) There are two independent tests for a disease. Test A is 97% effective at identifying the disease when it is present, but has a 15% false positive rate and Test B is 80% effective with a 2% false positive rate. Suppose that 1 in 250 people have the disease. Only one test can be used. Which test returning positive is a better indicator of the disease? Justify your answer mathematically and give $P(disease|A)$ and $P(disease|B)$. [6]

   (d) Given the Bayesian network given below use inference by enumeration to compute the probability of a memory fault given that a warning light and error message are observed. [12]