Operating Systems

(a) In the context of virtual memory management:

(i) What is demand paging? How is it implemented? [4 marks]

(ii) What is meant by temporal locality of reference? [2 marks]

(iii) How does the assumption of temporal locality of reference influence page replacement decisions? Illustrate your answer by briefly describing an appropriate page replacement algorithm or algorithms. [3 marks]

(iv) What is meant by spatial locality of reference? [2 marks]

(v) In what ways does the assumption of spatial locality of reference influence the design of the virtual memory system? [3 marks]

(b) Buses are used to connect devices to the processor.

(i) Describe with the aid of a diagram the operation of a synchronous bus. [4 marks]

(ii) In what ways does an asynchronous bus differ? [2 marks]