Time: 1.5 hours   **Marks: 50**

Answer all questions

1. (a) Why does the PCB need to record the resources currently in use by a process?
    (b) Define the different stages of the process.
    (c) Describe the action taken by a kernel to switch context between processes. [2+4+4]

2. (a) Explain the Multilevel Feedback Queue Scheduling algorithm.
    (b) Why does the OS have to provide semaphores? Explain with an example. [5+5]

3. (a) What are your solution strategies for the "Dining Philosophers Problem"?
    (b) How do you avoid deadlock in a computer system? Explain with a suitable algorithm. [5+5]

4. Given memory partition of 100KB, 500KB, 200KB, 300KB, and 600KB (in order), how would
    each of the "first-fit", "best-fit", "worst-fit", algorithms place process of 212KB, 417KB, 112KB,
    and 426KB (in order)? Which algorithm makes the most efficient use of the memory? [10]

5. (a) Explain the concept of Demand paging in Virtual Memory.
    (b) Why do we use the Translation look-aside buffer in paging? Explain. [5+5]