



13. Which of the following is a characteristic of thread?
- A) Because no system calls are involved, threads are very slow
  - B) There are many kernel structures affected by the existence of threads in a program
  - C) If one thread opens a file to read it, all the other threads can also read from it
  - D) The thread doesn't even know that kernels exist
14. Which one of the following does not use operating system?
- A) video game consoles
  - B) mobile phones
  - C) inverters
  - D) supercomputers
15. Which system call returns the process identifier of a terminated child?
- A) wait
  - B) exit
  - C) fork
  - D) get

## SECTION B

- 1 a. What is System call? (1 mark)
- b. Describe the following states of a process:
- i. Terminated.
  - ii. New.
  - iii. Running.
  - iv. Waiting.
  - v. ready. (5 marks)
- c. With the aid of a well labelled diagram, describe Multilevel Feedback Queue (7 marks)
- d. Distinguish between preemptive and non-preemptive scheduling. (2 marks)
- e. Briefly describe each layer structure of an Operating System. (6 marks)
- f. List four (4) types of scheduling. (4 marks)
- 2 a. List (5) Five types of System Calls. (5 marks)
- b. Give a DETAILED explanation about the following CPU Scheduling algorithms.
- i. Round Robin. (4 marks)
  - ii. First Come First Served (FCFS). (3 marks)
- c. Process cooperation deals with three main issues, state the issues. (3 marks)
- 3 a. Enumerate four (4) advantages of Cooperating processes. (2 marks)
- b. Using well labelled diagrams only, state The Thread Model. (5 marks)
- c. Discuss the following functions of operating system:
- i. Job scheduling.
  - ii. Interrupt handling.
  - iii. Inter process communication. (6 marks)
- d. Describe the concept of Context Switch. (2 marks)
- 4 a. State three (3) elements of locking mechanism to achieve mutual exclusion in (3 marks)
- b. Discuss the following ways in which a queue can be implemented in buffering:
- i. Zero capacity.
  - ii. Bounded capacity.
  - iii. Unbounded capacity. (6 marks)
- c. Describe what you understand by Cooperating Processes. (3 marks)
- d. List ANY three (3) items of Thread Control Box (TCB). (3 marks)
- 5 a. What is a Process? (1 mark)
- b. What do you understand by Medium term Scheduler? (2 marks)
- c. Describe Interprocess communication. (4 marks)
- d. State three (3) properties of indirect communication link. (3 marks)
- e. With the aid of a well labelled diagram, discuss Simple Interrupting Processing. (10 marks)