

UNIVERSITY OF AGRICULTURE, ABEOKUTA
DEPARTMENT OF COMPUTER SCIENCE, ABEOKUTA

Second Semester, 2009/2010 Session

CSC 322 – COMPUTER OPERATING SYSTEM I

Instruction:- Answer any four questions

Time Allowed:- 2hrs

Question 1

- a. Describe the generations of Operating System
- b. A process is defined as “the animated spirit of a procedure”. Explain.
- c. Describe the structure of the Nucleus of Operating System
- d. State 5 functions of the Nucleus of Operating System that are related to process handling

Question 2

- a.
 - i. What is an Interrupt and how is it generated?
 - ii. State the sequences of actions that occur in order to handle an interrupt
- b. Give an example for each of the six types of interrupt
- c. What is the significance of Program Status Words in interrupt handling?
- d. In modern Operating System, why are major parts of the Nucleus placed in Microcode

Question 3

- a.
 - i. What is threading?
 - ii. How are threads similar to processes?
- b. Explaining the following Operating System Concepts
 - i. A Trap ii. Asynchronous process iii. Spawning iv. Interrupt clock
 - v. Serially reusable resources vi. Reentrant code vii. Spooling viii. Shared resources
- c.
 - i. What is a PCB?
 - ii. Mention 9 information contained in the PCB

Question 4

- a. Explain the levels of scheduling
- b. State 10 objectives of scheduling
- c. Explain 3 pre-emptive scheduling techniques. State the strengths and weaknesses of these techniques
- d.
 - i. What is priority?
 - ii. Differentiate between Static and Dynamic priorities

Question 5

- a. Scheduling in Operating System can be described using the basic queuing model. Explain.
- b. The scheduling of a uniprocessor system is described as a Poisson process. If the mean arrival rate is 3.5s and the mean service time is 6s
 - i. Calculate the traffic intensity
 - ii. What is the implication of the traffic intensity computed?
 - iii. Calculate the second moment of the service distribution if the mean residual life of the service time is 8s
 - iv. Calculate the waiting time if the scheduling algorithm is shortest job first
 - v. Calculate the number of process waiting in the queue

Question 6

- a. What do you understand by virtual storage? How is it different from cache memory?
- b. With the aid of diagram, describe the following:-
 - i. Coalescing ii. Storage Compaction
- c. Describe the main problem with fixed-partition multiprogramming
- d. A variable partition memory system has at some point in time, the following hole-sizes in the given order: 100k, 300k, 200k, 400k. A new process of size 150k is to be loaded into the memory, which hole size would be filled using best – fit, first – fit and worst – fit respectively