CRAWFORD UNIVERSITY,FAITH CITY, IGBESA, OGUN STATE, NIGERIA
COLLEGE OF NATURAL AND APPLIED SCIENCES
DEPARTMENT OF COMPUTER AND MATHEMATICAL SCIENCES
2008/2009 HARMATTAN SEMESTER EXAMINATION

COURSE TITLE:- OPERATING SYSTEM 1 **COURSE UNIT:3**
COURSE CODE: CSC301 **TIME ALLOWED:** 2½HRS

INSTRUCTION(S): ANSWER QUESTION 1 AND ANY THREE QUESTIONS

1 (a) (i) Explain the term process and differentiate between a process and a program. (3marks)
(ii) Why would a new process terminates the executing process? (2marks)
(iii) Explain the six process state transmission. (6marks)

(b) Explain the following terms
(i) Context switching
(ii) Multiprogramming
(iii) Multiprocessing
(iv) Multitasking (10marks)

(d) Explain the action of kernel to context switching among processes. (4marks)

2 (a) All scheduling algorithms are essentially priority scheduling algorithms. Discuss this statement with reference to the First-Come-First-Serve (FCFS), Shortest job first (SJF), Shortest remaining time first (SRTF) and Round-Robin (RR) scheduling algorithms.
(b) What is spooling?
(c) Do you think that advanced PC will have spooling as a standard feature in the future. (15marks)

3 (a) What is Deadlock state. Discuss.
(b) A state is said be **safe** if there exists a sequence of other state that leads to all processes getting all their resources and terminating. Explain this statement with respect to banker's algorithm.
(c) "An unsafe state does not imply the existence of deadlock". Explain. (15marks)

4(a) What is a race condition?
(b) How can a race condition be avoided?
(c) Does the busy waiting solution using the turn variable work when the processes are running on two CPU sharing a common memory. (15marks)

5(a) Five batch jobs A through E, arrives at a computer centre at almost the same time. They have estimated running time of 10, 6, 2, 4, and 8 minutes. Their priorities are 3, 5, 2, 1, 4 respectively. 5 is the highest priority rate. For each of the following scheduling algorithms, determine the mean process turnaround time. Ignore process switch overhead.
(i) Round-Robing (with Q = 4)
(ii) Priority Scheduling
(iii) FIFO (run in order 10, 6, 2, 4, 8)
(iv) Shortest job first.

(b) What constitute a good scheduling algorithm?
(c) Preemptive Vs Non -Preemptive scheduling. Discuss. (15marks)