

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- September 2016

B.Tech V Semester

COURSE CODE: 10B11CI511

MAX. MARKS: 15

COURSE NAME: Operating System

COURSE CREDITS: 04

MAX. TIME: 1Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1 (1*5= 5 Marks)

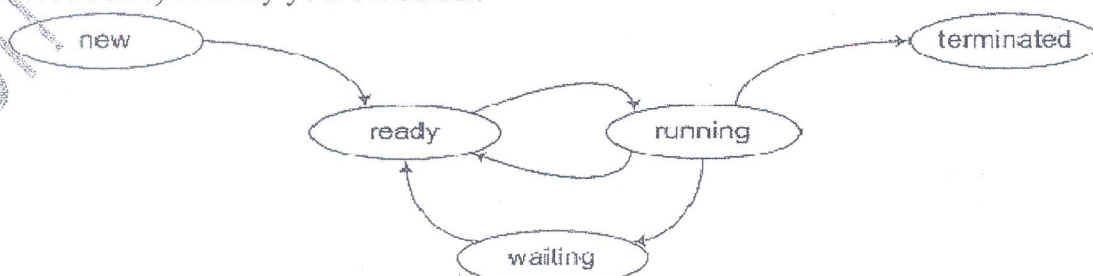
- Explain the difference between multi-programming and time sharing.
- What is meant by a system call?
- What is a zombie process and how it may manifest itself?
- Explain starvation. When and how starvation may occur? Also specify the CPU scheduling algorithm that may result in starvation.
- What resources are required to create a thread? How creation of threads is different from process creation.

Q. 2 a) (3 Marks) Consider a system with 5 processes with arrival times (0,0,6,7,8) and burst times (16,10,4,6,10) respectively. Create Gantt chart and calculate the avg. waiting time for Round Robin scheduling and Shortest Remaining Time First (Preemptive SJF) algorithm. Assume that the quantum is set to 5 time units.

b) (1 Mark) A short quantum size in round robin allows a scheduler to cycle through more processes more quickly than with a long quantum. What is the downside of this?

Q. 3 a. (2.5 Marks) Write a parent program that forks three child processes that each sleeps a random number of seconds. The parent process should wait for a child process to terminate and each process will print their respective process ids and parent process ids.

b. (1.5 Marks) The following process diagram will be a representative of non-preemptive scheduler (True/False) . Justify your statement.



Q. 4 (2 Marks) Explain how dual mode operation is used in {memory, IO, CPU} protection.