G 7120

(Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, APRIL 2011

Fifth Semester

Computer Science and Engineering

OPERATING SYSTEMS (R)

(Supplementary)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

1. What are the advantages and disadvantages of multiprocessor system ?
2. Write notes on batch processing systems.
3. Define Process Control Block. Explain the functions of Process Control Block.
4. Define Process and a thread. What resources are used when a thread is created ?
5. What are critical sections ? Explain how to processes co-operate to enter critical section.
6. Explain the design issues related to resource pre-emption in deadlock elimination.
7. Write the steps performed by the OS when a page fault occurs.
8. What are the advantages and disadvantages of paging ?
9. What are inverted files ? Explain.
10. Write short notes on virtual devices.

(10 × 4 = 40 marks)

Part B

11. (a) Discuss in detail the structure of UNIX OS.

Or

(b) Describe the various types of OS.

12. (a) Classify scheduling algorithms. Explain any *two* algorithms in each class with examples.

Or

(b) (i) Give the complete process transition diagram by indicating which system calls and possible events would cause particular state transitions.

(8 marks)

Turn over

(ii) To what degree, do the following algorithms favour CPU-board processes ?

(a) First-Come-First-Served

(b) Shortest Job First

(c) Shortest Remaining Time

(d) Multilevel feedback queues.

(4 marks)

13. (a) Explain the various issues in deadlock avoidance. Illustrate Bankers algorithm with a suitable example.

Or

(b) (i) Write short notes on monitors. (4 marks)

(ii) Single instance of each resource type R_1, R_2 and R_3 is available. Process P_1 may use R_1 and R_2, P_2 may use R_2 and R_3 and P_3 may use R_3 and R_1. Requests occur in the order given below :

$$P_2 \rightarrow R_3, P_1 \rightarrow R_2, P_3 \rightarrow R_1, P_3 \rightarrow R_3, P_2 \rightarrow R_2, P_1 \rightarrow R_1 .$$

(a) Indicate whether each of the above requests can be granted, so that deadlock is avoided.

(b) State the reason when a request cannot be granted.

(c) Indicate which process will finish first and last.

(d) If the above sequence of requests is granted freely, in that order (without testing for possible deadlock) will there be a deadlock ? If so, identify the allocation which results in a deadlock.

(8 marks)

14. (a) Discuss continguous allocation Vs non-contiguous allocation. What are their merits and demerits ?

Or

(b) Explain how Demand Paging is similar to a paging system with swapping.

15. (a) Explain the different types of disk scheduling algorithms with an example.

Or

(b) Discuss the linear list and hash table file organization models.

(5 × 12 = 60 marks)