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Printed Pages—4

TCS—601

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID: 1077

Roll No.

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**B.Tech.**

(SEM VI) EVEN SEMESTER THEORY EXAMINATION,  
2009-2010

**OPERATING SYSTEMS**

Time : 3 Hours

Total Marks : 100

- Note : (i) Attempt **ALL** the questions.  
(ii) All questions carry equal marks.

1. Attempt any four of the following : (4x5=20)

- (a) Write down the advantages of batch processing system.
- (b) What are the major functions of operating system ?
- (c) Explain the main features of an real time operating system.
- (d) Draw the layered structure of an operating system.
- (e) Discuss the evolution of operating system.
- (f) Write down about the following in brief :
  - (a) System protection
  - (b) System components

2. Attempt any four parts of the following : (4x5=20)

- (a) Draw the process state diagram and explain the state transition.
- (b) Provide the solution of critical section problem.
- (c) Explain the binary semaphores with an example.
- (d) What do you understand by concurrent processes? Explain with an example.
- (e) Write a brief note on Inter Process Communication.
- (f) How concurrency problems are solved with Producer and Consumer problem?

3. Attempt any four parts of the following : (4x5=20)

- (a) What do you understand by CPU Scheduling? Which one is best and why?
- (b) Calculate turn around time and waiting time for following processes, if these processes are using :
  - (i) SJF
  - (ii) FCFS

Process	Arrival time	Burst time
P <sub>1</sub>	0	8
P <sub>2</sub>	1	4
P <sub>3</sub>	2	9
P <sub>4</sub>	3	5

- (c) Explain the different conditions of deadlock.
- (d) Write down the methods for deadlock prevention.
- (e) Discuss about Multiprocessor scheduling in brief.
- (f) How the recovery from deadlock is done using combined approach?

4. Attempt any two parts of the following : (2x10=20)

- (a) Discuss the paging system for memory management in details. Also give its advantages and disadvantages.
- (b) Discuss about following in details :
  - (i) Demand paging
  - (ii) Thrashing
- (c) (i) What do you understand by Page replacement? Name the algorithm available for Page replacement.  
  
(ii) How many Page faults occur for optimal Page replacement algorithm with following reference string for four page frames :

1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

5. Attempt any two parts of the following : (2x10=20)

- (a) Explain the file system and its function and how system calls are related with file system.
- (b) Write short notes on following :
  - (i) Memory mapped I/O.
  - (ii) Direct Access Method for file.
- (c) (i) Write down the criterion for selection of disk-scheduling algorithm.
  - (ii) Suppose, a disk have 5000 cylinders, numbered 0 to 4999. The drive is currently sending a request at cylinder 143 and the previous was a cylinder 125. The queue of pending request in FIFO order is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130.

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