14CS304/14IT304

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2018 **Common to CSE & IT**

Third Semester **Operating Systems**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)
   a) What is an operating system?
   b) Define a thread.
   c) What is a semaphore?
   d) What is a safe state?
   e) Define a dirty bit.
   f) What is thrashing?
   g) List out file properties.
   h) Define a directory.
   i) Distinguish between seek time and latency time.
   j) What is the role of device controller?
   k) What is a free-space management?
   l) What is compaction?

UNIT I

2. a) Explain about the Evolution of operating systems. 6M
   b) What are the main functions of Operating System? Explain them 6M

(OR)

3. a) Define a Process. Describe Process State transition diagram with a neat sketch. 6M
   b) List and describe different types of schedulers. 6M

UNIT II

4. a) Compare preemptive Scheduling and non-preemptive scheduling. 6M
   b) Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	CPU Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0.

i. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1). 6M

ii. What is the turnaround time of each process for each of the scheduling algorithms in part i?

iii. What is the waiting time of each process for each of the scheduling algorithms in part i?

(OR)

5. a) Explain the concept of Monitors. 6M
   b) Write and explain Producer - Consumer classical synchronization problem. 6M

UNIT III

6.	a)	Describe First-fit, Best-fit and Worst-fit algorithms	6M
	b)	Describe necessary conditions for deadlock occurrence.	6M

(OR)

7.	a)	Describe the demand-paging Memory Management technique.	6M
	b)	Describe Page Replacement algorithms with an example.	6M

UNIT IV

8.	a)	What is a file? What are the different operations that can be performed on a file?	6M
	b)	Discuss in detail about file accessing methods.	6M

(OR)

9. Explain the following. 12M

i)Application I/O interface ii) Kernel I/O subsystem