14CS/IT 304

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2019 — **Common to CSE and 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 are the four components of a computer system?
   b) How does multiprogramming increase CPU utilization?
   c) Differentiate Thread and Process.
   d) Define a system call
   e) Define wait-for-graph.
   f) What is a race condition?
   g) What is a Semaphore?
   h) What does each entry in the page table contain?
   i) What are the two forms of fragmentation?
   j) List attributes of a file.
   k) Differentiate a file and directory.
   l) What do you mean by page fault?

UNIT I

2. a) Explain briefly about OS structures. 6M
   b) What are the functionalities of operating system? Explain in detail. 6M

(OR)

3. a) Explain briefly about inter process communication. 12M

UNIT II

4. a) Write about i) Process Control Block ii) CPU scheduling algorithm evaluation. 6M
   b) Consider the following set of processes, with the length of the CPU burst given in milliseconds: 6M

Process	CPU Burst Time	Arrival Time
1	3	0
2	6	2
3	4	4
4	5	6
5	2	8

Perform non preemptive CPU scheduling algorithms on the given snapshot and analyze their performance.

(OR)

5. a) What are the semaphores? How do they implement mutual exclusion? 6M
   b) What is Readers-Writers problem? Give a solution to Readers-Writers problem using Monitors 6M

UNIT III

6. a) Describe the Safe, unsafe, and deadlock state spaces. 6M
   b) Explain the Resource-Allocation Graph Algorithm for deadlock prevention. 6M

(OR)

7. a) Write the difference between internal and external fragmentation. 6M
   b) What is a Virtual Memory? Discuss the benefits of virtual memory technique 6M

UNIT IV

8. a) Write in detail about file attributes, operations and types and structures. 6M
   b) Describe the concept of directory structures. 6M

(OR)

9. a) Explain various file access methods with suitable examples. 6M
   b) Compare protection and security of an operating system. 6M

Hall Ticket Number:

14CS/IT304

II/IV B.Tech (Regular) DEGREE EXAMINATION

Computer Science and Engineering

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 are the four components of a computer system?
b	How does multiprogramming increase CPU utilization?
c	Differentiate Thread and Process.
d	List at least three different criteria for designing a CPU scheduling algorithm
e	Define wait-for-graph.
f	What is a race condition?
g	What is a Semaphore?
h	What does each entry in the page table contain?
i	What are the two forms of fragmentation?
j	List attributes of a file.
k	What are the Conflicting trends of I/O devices?
l	What do you mean by page fault?

UNIT – I

2.a	Explain evolution of operating systems.	8M
2.b	What are the functionalities of operating system? Explain in detail.	4M

(OR)

3.a	What are the components of process control block? Explain.	6M
3.b	Write in detail about the thread libraries.	6M

UNIT – II

4.a	Write about i) Process Control Block ii) CPU scheduling algorithm evaluation.	6M
4.b	Consider the following set of processes, with the length of the CPU burst given in milliseconds: Process / CPU Burst Time / Arrival Time 1 / 3 / 0 2 / 6 / 2 3 / 4 / 4 4 / 5 / 6 5 / 2 / 8 Perform non preemptive CPU scheduling algorithms on the given snapshot and analyze their performance.	6M

(OR)

5.a	What are the semaphores? How do they implement mutual exclusion?	6M

5.b	What is Readers-Writers problem? Give a solution to Readers-Writers problem using Monitors	6M

UNIT – III

6.a	Describe the Safe, unsafe, and deadlock state spaces.	6M
6.b	Explain the Resource-Allocation Graph Algorithm for deadlock prevention.	6M

(OR)

7.a	Write the difference between internal and external fragmentation.	6M
7.b	What is a Virtual Memory? Discuss the benefits of virtual memory technique	6M

UNIT – IV

8.a	Write in detail about file attributes, operations and types and structures.	6M
8.b	Describe the concept of directory structures.	6M

(OR)

9.a	Explain various file access methods with suitable examples.	6M
9.b	Compare protection and security of an operating system.	6M