SEMESTER EXAMINATION, APRIL-MAY, 2025

Course Name: -B.Tech CSE **Semester: - IV**

Paper Name: - Operating System **Paper Code: -TCS 401**

Time – 3 Hrs + 20 minutes per hour extra time for V.I. & examinees with writer. Max Marks-70

Additional 30 Minutes for Mid-Test.

Instructions:

- The question paper consists of three sections namely A, B, C. All sections are compulsory.
- Section A- Each question carries **3 mark. All questions are compulsory**.
- Section B- Answer any **5 out of 7** given questions. Each question carries **7 marks**.
- Section C- Answer any **2 out of 3** given questions. Each question carries **10 marks**.
- Section D- Each question carries **02 mark**. All questions are compulsory.

Section – A
Objective Questions

1. Answer all the following questions. 5x3 =15

(i) The operating system is responsible for?
a) bad-block recovery
b) booting from disk
c) disk initialization
d) all of the mentioned

(ii) Whenever a process needs I/O to or from a disk it issues a _____
a) system call to the operating system
b) a special procedure
c) system call to the CPU
d) all of the mentioned

(iii) In Unix, which system call creates the new process?
a) create
b) fork
c) new
d) none of the mentioned

(iv) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____
a) job queue
b) ready queue
c) execution queue
d) process queue

(v) In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of _____
a) all process
b) currently running process
c) parent process
d) init process

Section – B
Short Answer Questions

2. Answer any five of the following. **5x7=35**

i. Describe deadlock in detail. Explain necessary conditions for deadlock. Which algorithm is most widely used to avoid deadlock.

ii. What is Race Condition and mutual exclusion? Differentiate between primitive and non-primitive. Name one non-primitive scheduling algorithm.

iii. What is Multithreading? How can you differentiate between thread and process? Explain the concept of PCB.

iv. Elaborate process state transition in detail. Describe various generations of operating system.

v. Describe various types of operating system. What are the various OS services?

vi. What is kernel and page fault? Explain monolithic kernel and micro kernel in detail.

vii. Write short note on Scheduling and virtual memory. Explain FCFS scheduling algorithm with all terminology in detail.

Section – C
Descriptive Questions

3. Answer any two of the following question in maximum 300 words. **2x10=20**

i) Explain paging with example in detail. Write a key difference between paging and segmentation. How can remove external fragmentation.

ii) Explain disk management in operating system. Describe some common disk management techniques used in OS. Name three disk scheduling algorithms. Write the advantage and disadvantage of disk management.

iii) Explain various objectives of file management in operating system. Discuss various types of file management in OS. Write the advantage and limitations of file management in OS.

SEMESTER END EXAMINATION, APRIL-MAY, 2025

Mid-Test

Course Name: B.Tech (CSE)
Paper Name: Operating System
Time - 30 minutes

Semester: IV
Paper Code: TCS 401
Max Marks-20

All questions are compulsory. 10x2 =20

Objective Questions

(i) For a deadlock to arise, which of the following conditions must hold simultaneously?
a) Mutual exclusion
b) No pre-emption
c) Hold and wait
d) All of the mentioned

(ii) Mutual exclusion to prevail in the system _____
a) at least one resource must be held in a non-sharable mode
b) the processor must be a uniprocessor rather than a multiprocessor
c) there must be at least one resource in a sharable mode
d) all of the mentioned

(iii) Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called?
a) fragmentation
b) paging
c) mapping
d) none of the mentioned

(iv) Operating System maintains the page table for _____
a) each process
b) each thread
c) each instruction
d) each address

(v) The switching of the CPU from one process or thread to another is called _____
a) process switch
b) task switch
c) context switch
d) all of the mentioned

(vi) Which of the following is not the state of a process?
a) New
b) Old
c) Waiting
d) Running

(vii) Physical memory is broken into fixed-sized blocks called _____
a) frames
b) pages
c) backing store
d) none of the mentioned

(viii) With paging there is no _____ fragmentation.
a) internal
b) external
c) either type of
d) none of the mentioned

(ix) What is a Process Control Block?
a) Process type variable
b) Data Structure
c) A secondary storage section
d) A Block in memory

(x) 9. What is the objective of multiprogramming?
a) Have a process running at all time
b) Have multiple programs waiting in a queue ready to run
c) To increase CPU utilization
d) None of the mentioned

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