JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

M.Tech-2nd Semester (CSE/IT)

COURSE CODE (CREDITS): 10M11CI212(3) MAX. MARKS: 15

COURSE NAME: ADVANCED OPERATING SYSTEMS

COURSE INSTRUCTORS: Dr. Pankaj Dhiman MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

<table>
<tr><th>Q.No</th><th>Question</th><th>CO</th><th>Marks</th></tr>
<tr><td>Q1</td><td>How are system calls categorized in an operating system? Compare and contrast process control system calls with file management system calls.</td><td>1</td><td>3</td></tr>
<tr><td>Q2</td><td>What is a "Process Control Block" (PCB), and what role does it play in process management? How does the PCB store information essential for process execution?</td><td>2</td><td>3</td></tr>
<tr><td>Q3</td><td>What is the output of following Fork System Call code:
#include <stdio.h>
#include <unistd.h>
int main()
{
if (fork() && (!fork())) {
if (fork() || fork()) {
fork(); } }
printf("2 ");
return 0; }</td><td>1</td><td>3</td></tr>
<tr><td>Q4</td><td>Consider the following processes with burst times and arrival times: Apply the non-preemptive SJF scheduling algorithm. Calculate the average waiting time and average turnaround time.
<table><tr><th>Process</th><th>Arrival Time (ms)</th><th>Arrival Time (ms)</th></tr><tr><td>P1</td><td>1</td><td>7</td></tr><tr><td>P2</td><td>5</td><td>5</td></tr><tr><td>P3</td><td>6</td><td>1</td></tr><tr><td>P4</td><td>8</td><td>2</td></tr><tr><td>P5</td><td>9</td><td>8</td></tr><tr><td></td><td></td><td></td></tr></table></td><td>2</td><td>4</td></tr>
<tr><td>Q5</td><td>What is the definition of a process in an operating system? How does it differ from a program?</td><td>1</td><td>2</td></tr>
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