



**PRESIDENCY UNIVERSITY
BENGALURU
SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023**

Semester : Semester IV - B.Tech CSE - 2021

Course Code : CSE2010

Course Name : Sem IV - CSE2010 - Operating System

Program : B.Tech – (All Programs)

Date : 13-APR-2023

Time : 9.30 AM – 11.00 AM

Max Marks : 50

Weightage : 25%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

(10 X 1 = 10M)

1. What is an operating system?
a) Interface between the hardware and application programs (CO1) [Knowledge]
b) Collection of programs that manages hardware resources
c) System service provider to the application programs
d) All of the mentioned
2. Command Interpreter is also called as _____ (CO1) [Knowledge]
a) Command Prompt
b) Shell
c) Kernel
d) Command
3. Operating System is a _____ (CO1) [Knowledge]
a) Resource Allocator
b) Control Program
c) Kernel
d) All of the above
4. Which of the following is not application software?
a) Windows10 b) Word Pad c) MS Excel d) Photoshop (CO1) [Knowledge]
5. BIOS is used by _____ (CO1) [Knowledge]
a) Operating System
b) Compiler
c) Interpreter
d) System Programs
6. The Stack section of a process holds _____ (CO2) [Knowledge]
a) Runtime memory
b) Global Variable
c) Local Variable
d) Dynamically allocated variable

7. What is true related to Context switch time ?
 a) Can be reduced with hardware support (CO2) [Knowledge]
 b) It's a pure overhead
 c) It's a mechanism of saving and loading of PCB's.
 d) All of the above
8. _____ IPC mechanism is used in order to communicate between the 2 processes running in different computers.
 a) Shared Memory (CO1) [Knowledge]
 b) Message Passing
 c) A or B
 d) Both A and B
9. Which of the following scheduling algorithm is non-preemptive scheduling?
 a) SJF scheduling (CO2) [Knowledge]
 b) Round-Robin scheduling
 c) SRTF scheduling
 d) None of the above
10. In operating system, each process has its own _____
 a) Address space (CO2) [Knowledge]
 b) Open Files and I/O devices
 c) CPU Registers
 d) All of the above

PART B

ANSWER ALL THE QUESTIONS

(4 X 5 = 20M)

11. What is the dual mode operations of OS? Explain with a neat diagram.
 (CO1) [Comprehension]
12. List three different system calls available in Windows Operating Systems and Linux Operating Systems. Explain any two system calls (Windows/ Linux).
 (CO1) [Comprehension]
13. List out the states of a process available in an Operating System. Explain the Process State diagram briefly
 (CO2) [Comprehension]
14. Discuss the different multithreading models with neat diagrams
 (CO2) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

(2 X 10 = 20M)

15. Consider there are 4 processes P1, P2, P3, and P4 arrived at 0, 2, 3 and 5 ms and requires 8, 7, 2 and 4 m sec to complete the task. these 4 processes has the priorities of 3, 1, 4 and 2. Apply pre-emptive priority scheduling algorithm in order to calculate Average waiting time and average turnaround time.
 (CO1) [Application]
16. Consider four CPU-intensive processes, which require 10, 12, 8 and 6 time units and arrive at times 0, 2, 4 and 6, respectively. How many context switches are needed if the operating system implements a shortest remaining time first scheduling algorithm? Do not count the context switches at time zero and at the end. Also calculate Average Turn-around Time and Average Waiting time
 (CO2) [Application]