2021-24

Sem-3

Time : 3 hours

Full Marks : 60

Pass Marks : 24

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

1. Answer all questions of the following : 1×10 = 10

   (a) A fixed slot of time is allocated to every process in _____ operating system.

   (i) Batch

   (ii) Real time

   (iii) Time sharing

   (iv) None of these

(b) Physical memory is broken into fixed size blocks which are called :

(i) Frames

(ii) Segments

(iii) Fence Register

(iv) Page size

(c) A Technique which allows the execution of processes that may not be completely in memory is :

(i) Paging

(ii) Segmentation

(iii) Virtual Memory

(iv) None of these

(d) Removing of suspended process from memory to disk and the subsequent return is called :

(i) Demand paging

(ii) Swapping

(iii) Segmentation

(iv) None of these

(e) CPU Scheduling is the task of selecting :

(i) A waiting process from the reading queue and allocating the CPU to it.

(ii) A ready process from the ready queue and allocating the CPU to it

(iii) None of these

(iv) Both (i) and (ii)

(f) To access the services of the operating system, the interface is provided by the :

(i) Library

(ii) System calls

(iii) Assembly instructions

(iv) API

(g) In Operating System, each process has its own :

(i) Open files

(ii) Pending alarms, signals and signal handlers

(iii) Address space and global variables

(iv) All of the mentioned.

(h) The request and release of resources are :

(i) Command line statements

(ii) Interrupts

(iii) System calls

(iv) Special programs

(i) The size of virtual memory is based on which of the following :

(i) CPU (ii) RAM

(iii) Address bus (iv) Data bus

(j) Which of the following is a condition that causes deadlock ?

(i) Mutual exclusion

(ii) Hold and Wait

(iii) Circular wait

(iv) All of these

2. What is an Operating System ? Explain various types of operating system. 5

Group – B

Answer any **three** questions of the following :

3. (a) What are System Calls ? Briefly explain the different types of system calls. 5

(b) Briefly explain any five services provided by an Operating System to the users and to programs. 5

(c) Describe the directory structure of LINUX or UNIX Operating System. 5

4. (a) How do you distinguish between a process and thread ? Explain in detail. 5

(b) What are Concurrent Process ? How is interprocess communication accomplished ? 5

(c) Differentiate between Time Sharing and Real Time Operating System. 5

5. (a) Write any two methods used for allocating disk space. 5

(b) Differentiate between Pre-emptive and Non-premptive Scheduling. Explain with example. 5

(c) What are the five (5) major activities of an Operating System in regard to Process Management 5

6. (a) Consider the following set of processes with the length of the CPU burst time given in milliseconds.

Process	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 O. Calculate the turn around time, wait time and response time with respect to FCFS, SJF and RR (Quantum = 1) Scheduling. 8

(b) What is deadlock ? What are the necessary Conditions for dead lock ? Describe about deadlock prevention and avoidance. 7

7. Write short notes on any **three** of the following : 5×3 = 15

(a) Paging

(b) Segmentation

(c) Virtual Memory

(d) Security and Authentication

(e) Process-State Transition Diagram