2023

COMPUTER APPLICATION

(Vocational)

Paper : CAVRC3036

(Operating System)

(Theory)

Full Marks : 60
Pass Marks : 24

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct answer (any *five*) : 1×5=5

   (a) Which of the following is not a type of Systems Software?

   (i) Device Driver

   (ii) Utility Program

   (iii) Application

   (iv) Operating System

(b) When does page fault occur?

(i) When the page is present in memory

(ii) When the deadlock occurs

(iii) When the page does not present in memory

(iv) When the buffering occurs

(c) The main purpose of the operating system is

(i) to speed up the system

(ii) to increase CPU utilization

(iii) to increase throughput

(iv) All of the above

(d) A process is copied from main memory to secondary memory on the basis of requirement, is known as

(i) first paging

(ii) demand paging

(iii) segmentation

(iv) None of the above

(Continued)

(e) Banker's algorithm is used

(i) to prevent deadlock

(ii) to deadlock recovery

(iii) to solve the deadlock

(iv) None of the above

(f) Identify the system call that is used to create new process.

(i) create()

(ii) fork()

(iii) create process()

(iv) exec()

(g) Which of the following algorithms might not cause starvation?

(i) FCFS

(ii) SRTF

(iii) Round-Robin

(iv) Priority Scheduling

(Turn Over)

(h) ____ provides the interface to access the services of the operating system.

(i) API

(ii) System call

(iii) Library

(iv) Assembly instruction

(i) The First Fit, Best Fit and Worst Fit algorithms are used for

(i) contiguous memory allocation

(ii) process from a queue to put in memory

(iii) processor to run the next process

(iv) All of the above

(j) FCFS is a type of ____ scheduling algorithm.

(i) preemptive

(ii) non-preemptive

(iii) hold and wait

(iv) All of the above

(Continued)

2. Answer the following questions in brief (any *five*) : 2×5=10

(a) What do you know about resource abstraction?

(b) What is batch operating system?

(c) Write any two factors of operating system design.

(d) What is process address space?

(e) How will you know the process id of current process?

(f) Write the two kinds of operations that are possible on semaphore.

(g) What is virtual memory?

3. Answer any *five* of the following questions : 5×5=25

(a) What is thread in OS? Explain in brief.

(b) How do you define the states of process?

(c) What are the objectives of multi-programming?

(Turn Over)

(d) Differentiate between multitasking and multiprocessing OS.

(e) What is starvation and aging in OS?

(f) How is process different from thread?

(g) What is a heap? Explain.

(h) Write what you know about thread model.

(i) Write a short note on fixed partition and variable partition.

4. Answer any *two* of the following questions : 10×2=20

(a) Explain the various functions and services of operating system.

(b) Describe the mechanism of paging.

(c) Discuss the necessary and sufficient condition of deadlock.

(d) Explain the Shortest Remaining Time First (SRTF or SJF) scheduling algorithm. Consider the details of four processes P1, P2, P3 and P4 as given in the table :

Process	*Burst Time*	*Arrival Time*
P1	7	0
P2	3	1
P3	4	2
P4	9	3

Find the average waiting time using SRTF algorithm.

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