Total No. of printed pages = 3

BCA 171501

Roll No. of candidate | | | | | | | | | | |

B.C.A. 5th Semester End-Term Examination

OPERATING SYSTEM

(New Regulation)

Full Marks – 70 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer Question No.1 and any *four* from the rest.

1. Answer the following (MCQ / Fill in the blanks) (10 × 1 = 10)

(i) What is an operating system?

(a) interface between the hardware and application programs
(b) collection of programs that manages hardware resources
(c) system service provider to the application programs
(d) all of the mentioned

(ii) CPU scheduling is the basis of ————————

(a) multiprogramming operating systems
(b) larger memory sized systems
(c) multiprocessor systems
(d) none of the mentioned

(iii) In Operating Systems, which of the following is/are CPU scheduling algorithms?

(a) Priority (b) Round Robin
(c) Shortest Job First (d) All of the mentioned

(iv) To access the services of the operating system, the interface is provided by the ————————

(a) Library (b) System calls
(c) Assembly instructions (d) API

[Turn over

(v) Which one of the following errors will be handle by the operating system?

(a) lack of paper in printer (b) connection failure in the network

(c) power failure (d) all of the mentioned

(vi) The ———— is used as an index into the page table.

(a) frame bit (b) page number

(c) page offset (d) frame offset

(vii) Which module gives control of the CPU to the process selected by the short-term scheduler?

(a) dispatcher (b) interrupt

(c) scheduler (d) none of the mentioned

(viii) What are the two kinds of semaphores?

(a) mutex and counting (b) binary and counting

(c) counting and decimal (d) decimal and binary

(ix) What will happen when a process terminates?

(a) It is removed from all queues

(b) It is removed from all, but the job queue

(c) Its process control block is de-allocated

(d) Its process control block is never de-allocated

(x) What is a medium-term scheduler?

(a) It selects which process has to be brought into the ready queue

(b) It selects which process has to be executed next and allocates CPU

(c) It selects which process to remove from memory by swapping

(d) None of the mentioned

2. (a) What is the difference between multi-programming and multiprocessing operating system? Explain. (5)

(b) What is Kernel? Explain the difference between Linux and Unix Kernel. (2+3=5)

(c) What is Distributed Operating system? What are the benefits of using it? Explain. (2+3=5)

3. (a) Briefly explain the role of operating system in main memory management. (5)

(b) What is create( ) and fork( )? Explain. (5)

(c) Why process scheduling is required? Explain throughput and response time (2+3=5)

4. (a) What is race condition? Explain (2+3=5)

(b) What is semaphore? What are the characteristics of it? Explain (2+3=5)

(c) Define Wait() and Signal(). Explain how they are used to handle critical section problem. (2+3=5)

5. (a) What is binary semaphore? Explain some advantages of counting semaphore? (2+3=5)

(b) What is the different between mutex and semaphore? Explain (5)

(c) What is FIFO? Find the number of page faults for page reference string 1,0,3,3,6,5 with 3 page frames. (1+4=5)

6. (a) From the given table find the following (Assume non-preemptive) using SJF algorithm (10)

(i) Completion time for all process

(ii) Turnaround time for all process

(iii) Average waiting time

(iv) Response Time for all process

Process	Arrival Time	Burst Time
P1	1	7
P2	2	5
P3	3	1
P4	4	2
P5	5	5

(b) What is process synchronization? Explain their types. (1+4=5)

7. (a) What is memory allocation? Briefly explain all the types of memory allocation process. (5)

(b) Write short notes of the following: (any two) (2×5=10)

(i) PCB

(ii) Virtual Memory

(iii) Paging