BCA (Honours) 3rd Semester Examination, 2022

Subject : Computer Application

Course : BCA-301

(Operating System)

Time: 4 Hours

Full Marks: 80

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words
as far as practicable.

Answer *the* questions no. 1 *and* any four *from the rest.*

1. Answer *any eight* questions:

    2×8=16

    (a) What is process?

    (b) What is long term scheduler?

    (c) What is semaphore?

    (d) Why does a computer start in kernel mode when power is first turned on?

    (e) What is page fault?

    (f) What is PCB?

    (g) What is Thrashing?

    (h) What is interrupt?

    (i) Why are page sizes always powers of 2?

    (j) Differentiate between Starvation and Deadlock.

    (k) Differentiate between multiprogramming and multitasking OS.

    (l) What is critical section problem?

2. (a) What are the different process states? Explain with proper diagram.

    (b) Solve the Producer – Consumer problem using semaphore.

    (c) What are the different criteria to solve critical section problem?

    (d) What are the First Fit, Best Fit, Worst Fit?   5+5+3+3=16

3. Find out the turnaround time and average waiting time for the following processes for each of the CPU scheduling algorithm:

    (i) FCFS, (ii) SRTF, (iii) Preemptive Priority Scheduling, (iv) Round-Robin (Consider Low number indicates the high priority and Time Quantum = 2)

Process	Arrival Time	Burst Time	Priority
0	0	8	3
1	1	5	1
2	2	3	5
3	3	8	2
4	4	4	4

    16

Please Turn Over

4. (a) Write short notes on: (i) Multiprogramming System, (ii) Time Sharing System, (iii) Multiprocessor System

   (b) Write the advantages of multi threaded programming.　　　　　　　$(4×3)+4=16$

5. (a) Discuss the drawback of FCFS and Priority Scheduling algorithm with example.

   (b) Explain Internal Fragmentation and External Fragmentation in memory allocation with proper examples.

   (c) What are the disadvantages of Paging?　　　　　　　$6+6+4=16$

6. (a) Suppose that a disk drive has 5,000 cylinders, numbered from 0 to 4,999. The drive is currently serving a request at cylinder 215 and the previous request was at cylinder 180. The queue of pending requests in FIFO order is 2061, 1200, 2006, 2736, 1100, 512, 710, 1912, 157, 1319, 4963, 3721. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithm:

   (i) FCFS, (ii) SSTF, (iii) SCAN, (iv) LOOK, (v) C-SCAN, (vi) C-LOOK

   (b) Write short note on Spooling.　　　　　　　$12+4=16$

7. (a) Briefly explain distributed systems.

   (b) What are the necessary conditions for deadlock?

   (c) Discuss the importance of Resource Allocation Graph with example.

   (d) Describe the procedures for handling page fault.　　　　　　　$4+4+4+4=16$