MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCA-301

OPERATING SYSTEM

Time Allotted : 3 Hours | *Full Marks* : 70

The figures in the margin indicate full marks.

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

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) Fork( ) is

      a) Creation of a new process

      b) Dispatching of a task

      c) Increment of task priority

      d) None of these.

   ii) A null process has a process identifier

      a) – 1 b) 0

      c) 1 d) Null.

iii) Computer Virus is
   a) a software
   b) a code attached to software
   c) intruders
   d) none of these.

iv) Which is not a layer of operating system ?
   a) Kernel
   b) Shell
   c) Application program
   d) Critical section.

v) TLB stands for
   a) Transition Look-Aside Buffer
   b) Translation Look-Aside Buffer
   c) Translation Local Buffer
   d) Translating Look-Aside Buffer.

vi) Thrashing
   a) reduces page I/O
   b) improves the system information
   c) implies excessive page I/O
   d) decreases the degree of multiprogramming.

vii) Context Switching is
   a) Part of Spooling
   b) Part of Poling
   c) Part of Interrupt Handling
   d) Part of Interrupt Servicing.

viii) The number of processes completed per unit time is known as
   a) output b) capacity
   c) efficiency d) throughput.

ix) In priority scheduling algorithm

a) CPU is allocated to the process with highest priority

b) CPU is allocated to the process with lowest priority

c) equal priority processes cannot be scheduled

d) none of these.

x) Round Robin scheduling falls under the category of

a) non pre-emptive scheduling

b) pre-emptive scheduling

c) both (a) and (b)

d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Explain PCB.
3. Define thread and its life cycle.
4. What do you mean by Critical Section Problem ? Explain with example.
5. Explain Demand Paging in memory management scheme. What is Multilevel Feedback Queue ?
6. What is page fault ? When does it occur ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) Name some criteria to evaluate a processor management scheme.
   b) What do you mean by long term, short term, and medium term scheduler ?
   c) What is multilevel feedback queue scheduling ?
   5 + 5 + 5

8. a) What do you mean by race condition ?
   b) Explain in detail the operations of semaphore.
   c) Explain the classical problems of synchronization in detail. 5 + 5 + 5

9. What are the necessary conditions for deadlock ? Describe a system model for deadlock. Explain the resource allocation graph for deadlock avoidance. Discuss different deadlock recovery techniques.
   2 + 5 + 5 + 3

10. a) Consider the following page reference string :
    0 1 3 6 2 4 5 2 5 0 3 1 2 5 4 1 0
    Calculate the page fault rate for the following algorithm :
    i) FIFO
    ii) LRU
    iii) Optimal (Memory size is 3 Frames).
    b) Explain Belady's anomaly for page replacement algorithm. 4 + 4 + 4 + 3

11. Write short notes on any *three* of the following : 3 × 5
    a) Distributed OS
    b) Thrashing
    c) File access methods
    d) Virtual memory
    e) Segmentation.