WEST BENGAL STATE UNIVERSITY

B.A./B.Sc. Honours 3rd Semester Examination, 2021-22

CMAACOR06T-COMPUTER APPLICATION (CC6)

OPERATING SYSTEM

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

GROUP-A

1. Answer any ***four*** questions from the following: 2×4 = 8

   (a) What is bootstrap loader?

   (b) Why FCFS Scheduling is called special case of Priority Scheduling?

   (c) What is meant by time sharing system?

   (d) What is ready queue? How its size relates with degree of multiprogramming?

   (e) What do you mean by context switching?

   (f) What is thrashing?

   (g) What are burst time and turn around time of a process?

GROUP-B

Answer any *four* questions from the following 8×4 = 32

2. What is fragmentation? Explain different types of fragmentation. How fragmentation differs from paging? 2+3+3

3. Consider the following set of processes, with the length of the CPU-burst time given in milliseconds: 4×2 = 8

Process	Burst Time	Priority
P_1	10	4
P_2	6	1
P_3	3	3
P_4	4	5
P_5	7	2

   Calculate the average turnaround time and average waiting time of each process for each of the following scheduling algorithms:

   (a) FCFS (b) SJF

4. (a) What is Process Control Block (PCB)? 2
   (b) Design and describe process state diagram. 4
   (c) What is thread in OS? 2

5. (a) What do you mean by shell? What are the different types of shells? 1+1
   (b) What is system call? 2
   (c) Briefly explain the utility of fork() system call. 4

6. (a) What is deadlock? 2
   (b) State the necessary and sufficient conditions for deadlock. 2
   (c) How deadlock can be detected using Resource Allocation Graph (consider only a single instance of each recource). 4

7. (a) Briefly explain FIFO page replacement algorithms. 3
   (b) What is Belady's anomaly? Illustrate it with an example. 3
   (c) What is demand paging? 2

8. Write short notes on any ***two*** of the following: 4×2 = 8
   (a) Dining Philosopher Problem and its solution using semaphore.
   (b) Multiprogramming operating system
   (c) TLB

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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