# UNIVERSITY OF NORTH BENGAL

BCA Honours 3rd Semester Examination, 2022

## CC6-BACHELOR OF COMPUTER APPLICATION (32)

### OPERATING SYSTEMS

Time Allotted: 2 Hours                                                         Full Marks: 40

*The figures in the margin indicate full marks.*

### GROUP-A

**Answer any *five* questions from the following**                    1×5 = 5

1.  What is multiprogramming?

2.  What is Kernel?

3.  What is critical section?

4.  What is the function of semaphores?

5.  What is a page?

6.  What is virtual memory?

7.  What is context switching?

8.  Name one disk scheduling algorithm.

### GROUP-B

**Answer any *three* questions from the following**                    5×3 = 15

9.  Differentiate between real time system and multiprocessor system.          5

10. Discuss the role of OS from different perspectives.                        5

11. Explain distributed operating system.                                      5

12. Explain preemptive and non-preemptive scheduling algorithms.               5

13. Discuss memory management.                                                 5

**GROUP-C**

**Answer any *two* questions from the following**  10×2 = 20

14.  What is CPU scheduling? Explain Shortest Remaining Time First (SRTF) algorithm.  2+8

15.  Consider the following snapshot of a system:  5+3+2

| | Allocation | | | | Max | | | | Available | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| $P_0$ | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 1 | 5 | 2 | 0 |
| $P_1$ | 1 | 0 | 0 | 0 | 1 | 7 | 5 | 0 | | | | |
| $P_2$ | 1 | 3 | 5 | 4 | 2 | 3 | 5 | 6 | | | | |
| $P_3$ | 0 | 6 | 3 | 2 | 0 | 6 | 5 | 2 | | | | |
| $P_4$ | 0 | 0 | 1 | 4 | 0 | 6 | 5 | 6 | | | | |

Answer the following questions using the banker's algorithm.

(a) What is the content of the matrix Need?

(b) Is the system in a safe state?

(c) If a request from process $P$, arrives for (0, 4, 2, 0), can the request be granted immediately?

16.  What is page replacement? Discuss any page replacement algorithm with the help of an example.  2+8

17.  Write short notes on any *two* of the following:  5×2 = 10
   (a) File Operations
   (b) Segmentation
   (c) Fixed and variable partitions
   (d) Time Sharing System.

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