

CBCS SCHEME

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15EC553

Fifth Semester B.E. Degree Examination, July/August 2022 Operating System

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Operating System. List the common tasks performed by operating system. (08 Marks)
- b. Discuss briefly key features of following class of operating system:
 - i) Real-time operating system
 - ii) Distributed operating system. (08 Marks)

OR

- 2 a. Illustrate the different memory allocation approaches. (06 Marks)
- b. Explain the operation of multiprogramming system. (06 Marks)
- c. Write the operation of a time slicing scheduler using time slice ' δ ' and scheduling overhead of the operating system is ' σ ' second. (04 Marks)

Module-2

- 3 a. Describe the structure of process state transition. (06 Marks)
- b. List the advantages of threads. (04 Marks)
- c. Explain the features of long, medium and short term scheduling. (06 Marks)

OR

- 4 a. Discuss three different methods of associating user level threads with Kernel-level threads with neat diagram. (08 Marks)
- b. For the given set of process perform Round-Robin scheduling operation and compute turn around time and weighted turn around.

Process	P ₁	P ₂	P ₃	P ₄	P ₅
Arrival time	0	2	3	5	9
Service time	3	3	2	5	3

Fig.Q.4(b)

(08 Marks)

Module-3

- 5 a. Discuss the following in case of contiguous memory allocation:
 - i) External fragmentation
 - ii) Internal fragmentation
 - iii) Compaction. (06 Marks)
- b. Show the operation of FIFO and LRU policies for the page reference string and the reference-time string for a process P are as follows. Use alloc = 3.
 Page reference: 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5,....
 Time reference: t₁, t₂, t₃, t₄, t₅, t₆, t₇, t₈, t₉, t₁₀, t₁₁, t₁₂, t₁₃,....
 Also discuss the problem of FIFO policy. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42.8 = 50, will be treated as malpractice.

OR

- 6 a. Illustrate the approaches used to implement non-contiguous memory allocation. (08 Marks)
b. Define virtual memory. List the different functions performed by virtual memory handler. (08 Marks)

Module-4

- 7 a. Write the schematic diagram of logical organization in file system and list the facilities provided by file system and the IOCS. (08 Marks)
b. Discuss linked allocation and indexed allocation of disk space. (08 Marks)

OR

- 8 a. Write the difference between sequential and direct file organization. (04 Marks)
b. Discuss two different approaches in file access methods. (06 Marks)
c. Explain the file system action at close. (06 Marks)

Module-5

- 9 a. List the issues and its important aspects in message passing system. (05 Marks)
b. Illustrate the concept of message passing using mail box. (05 Marks)
c. Describe the approaches used to handle deadlock. (06 Marks)

OR

- 10 a. With neat diagram, discuss the deadlock prevention approach. (08 Marks)
b. Discuss the following with syntax in case of message passing:
i) Direct and indirect naming.
ii) Blocking and non blocking sender. (08 Marks)

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