

M.Sc. Comp. Sci. Sem - II 75: 25 dt. 07/01/2025

[Total Marks: 75]

(2<sup>1/2</sup> Hours.)

- N. B.: (1) All questions are compulsory.  
(2) Numbers to the right indicate marks.  
(3) Make suitable assumptions wherever necessary and state the assumptions made.  
(4) Answers to the same question must be written together.  
(5) Mixing of Sub-Questions is not allowed.  
(6) Draw neat labelled diagrams wherever necessary.

1. Attempt any three of the following:

15

- What is Linux kernel? Explain different types of kernels.
- Explain any two scheduling algorithms in details.
- Discuss the features of GRUB.
- Describe the shared memory and message-passing method of communication.
- Differentiate between kernel mode and user mode.
- Discuss how the following pairs of scheduling criteria conflict in certain settings.
  - CPU utilization and response time
  - Average turnaround time and maximum waiting time

2. Attempt any three of the following:

15

- Describe in detail the concept of swapping.
- Explain the characteristics of a page table.
- Write in brief about segmentation.
- Explain the concept of Least Recently Used (LRU) page replacement algorithm.
- Write a short note on Linux Memory Management.
- Discuss the various design issues for paging system.

3. Attempt any three of the following:

15

- What is security? Explain authentication and one time password in detail.
- Elaborate File system implementation.
- Write a short note on Direct Memory Access.
- Explain how deadlock can be avoided in operating system.
- How circular wait is occur between processes explain with an example.
- Describe the structure of Device Driver System with neat and clean diagram.

4. Attempt any three of the following:

15

- Describe in detail Android Software Stack.
- Explain Android Activity Life Cycle.
- Write a short note on SQLite.
- State and explain various content provider methods.
- Describe Dalvik Virtual machine.
- How SMS client app can be developed in Android?

5. Attempt any three of the following:

15

- Explain GRUB-I in detail.
- Discuss the concept of virtual memory.
- Write a short note on translational look aside buffer.
- State the necessary condition for deadlock to occur.
- Write a short note on Telephony Manager.
- Explain the Android Application Architecture in detail .