

Date: 20.11.2019

Time: (2 $\frac{1}{2}$ Hours)

Total Marks: 75

- N.B.
- (1) All questions are compulsory.
 - (2) Figures to the right indicate marks for respective sub questions.
 - (3) Use of **Non-programmable** calculators is **allowed**.
 - (4) Draw **neat labeled diagrams** wherever **necessary**.
 - (5) Symbols used have their usual meaning
 - (6) Draw the sketches and diagrams where necessary

Q.1) Attempt **any THREE** of the following. (15)

- a) Write a short note on Fifth Generation of Operating System.
- b) Explain the micro kernel approach of operating system design.
- c) What is an operating system? Explain memory management and file management functions in operating system.
- d) Write a difference between process and thread.
- e) Write a short note on process termination.
- f) Explain Process control block.(PCB) with the help of diagram.

Q.2) Attempt **any THREE** of the following. (15)

- a) List various page replacement algorithms. Explain The First-In, First-Out (FIFO) Page Replacement Algorithm with following example. Page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2 with 4 page frames.
- b) Explain in brief concept of segmentation.
- c) List and explain any five operations performed on Directories.
- d) Write a note on I-nodes and Linked list allocation.
- e) List and explain different file attributes.
- f) Explain Memory Management with Bitmaps.

Q.3) Attempt **any THREE** of the following. (15)

- a) Explain the working of DMA.
- b) Write note on Memory-Mapped I/O
- c) Explain the LOOK algorithm with following example. Suppose the following disk request sequence (track numbers) for a disk with 100 tracks is given: 45, 20, 90, 10, 50, 60, 80, 25, 70. Assume that the initial position of the R/W head is on track 50.
- d) Explain the process of Deadlock Detection with One Resource of Each Type.
- e) Explain preemptable and non-preemptable resources.
- f) Explain recovery from deadlock.

Q.4) Attempt **any THREE** of the following. (15)

- a) Write a note on Type-1 and Type-2 Hypervisor.
- b) Explain any five advantages of virtualization.
- c) Write the essential characteristics of cloud.
- d) What is Master-Slave Multiprocessors Operating System?
- e) Write difference between multiprocessor and distributed system.
- f) Explain the crossbar switch structure used for UMA multiprocessors.

Q.5) Attempt **any THREE** of the following. (15)

- a) Write a note on windows power management.
- b) Using suitable diagram explain the architecture of Android Operating System.
- c) Write note on Binder IPC.
- d) Explain various memory management system calls in Linux.
- e) Write Memory-Management System Calls in Windows.
- f) List and explain attributes used in MFT record.
