

particular time ? Illustrate how it can be used to avoid the deadlock in the system ?

- (b) Explain the working of wait-for graph used for detecting a deadlock.
9. (a) What is disk scheduling ? Explain the SSTF and SCAN scheduling with appropriate examples.
- (b) Enumerate different types of I/O software along with their respective characteristics and uses.

Roll No. ....

**67107**

**MCA 3rd Semester (CBCS Scheme)**

**w. e. f. Dec. 2017-18**

**Examination – December, 2018**

**OPERATING SYSTEMS**

**Paper : 17MCA33C2**

**Time : Three Hours ] [ Maximum Marks : 80**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Write distinguished features of Asymmetric multiprocessing system.
- (b) What are soft real time systems ?
- (c) Discuss the working principle and need of medium term scheduler.
- (d) Why are page sizes always kept as powers of 2 ?

(e) Define the following :

Throughput and Waiting Time for any process.

- (f) Discuss the need and importance of Translation Look aside Buffer in memory management.
- (g) What do you understand by process synchronization and discuss one method for implementing it ?
- (h) List different types of shells (UNIX) along with their respective applications.

#### UNIT - I

2. (a) What do you mean by Shortest Job First scheduling algorithm ? Discuss whether it works as preemptive or non-preemptive.
- (b) Differentiate between the working of client server and peer to peer distributed systems.
3. (a) Define process and its different states with the help of labeled diagram.
- (b) Explain different ways for implementing the message passing system used in IPC.

#### UNIT - II

4. What do you mean by Address binding ? Discuss the multistep processing of a user program depicting its compile time, load time, execution time and linking time. Also define the virtual address space of any system and discuss the role of memory management unit and relocation register in memory allocation.

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5. (a) What are different types of fragmentation ? Suggest at least *one* solution for each type of fragmentation.
- (b) Given memory partitions of 10KB, 20KB, 40KB, 60KB and 70KB , how would each of the first-fit, best-fit and worst-fit algorithms will place the processes of 12KB, 42KB and 55KB ? Which algorithm makes the most efficient use of memory ?

#### UNIT - III

6. (a) Differentiate between the truncate and delete operation of the file. Also enumerate the file structure used in computer system.
- (b) Define the critical section problem. Explain the multiple process solution used to solve this problem.
7. (a) Why semaphores hold an important place in implementing the operating system ? Describe its usage and implementation in terms of wait and signal semaphore operation.
- (b) Discuss in detail the dining philosophers problem as one of the classic problems of synchronization.

#### UNIT - IV

8. (a) Enumerate how the resource allocation graph helps in depicting the status of system at any

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