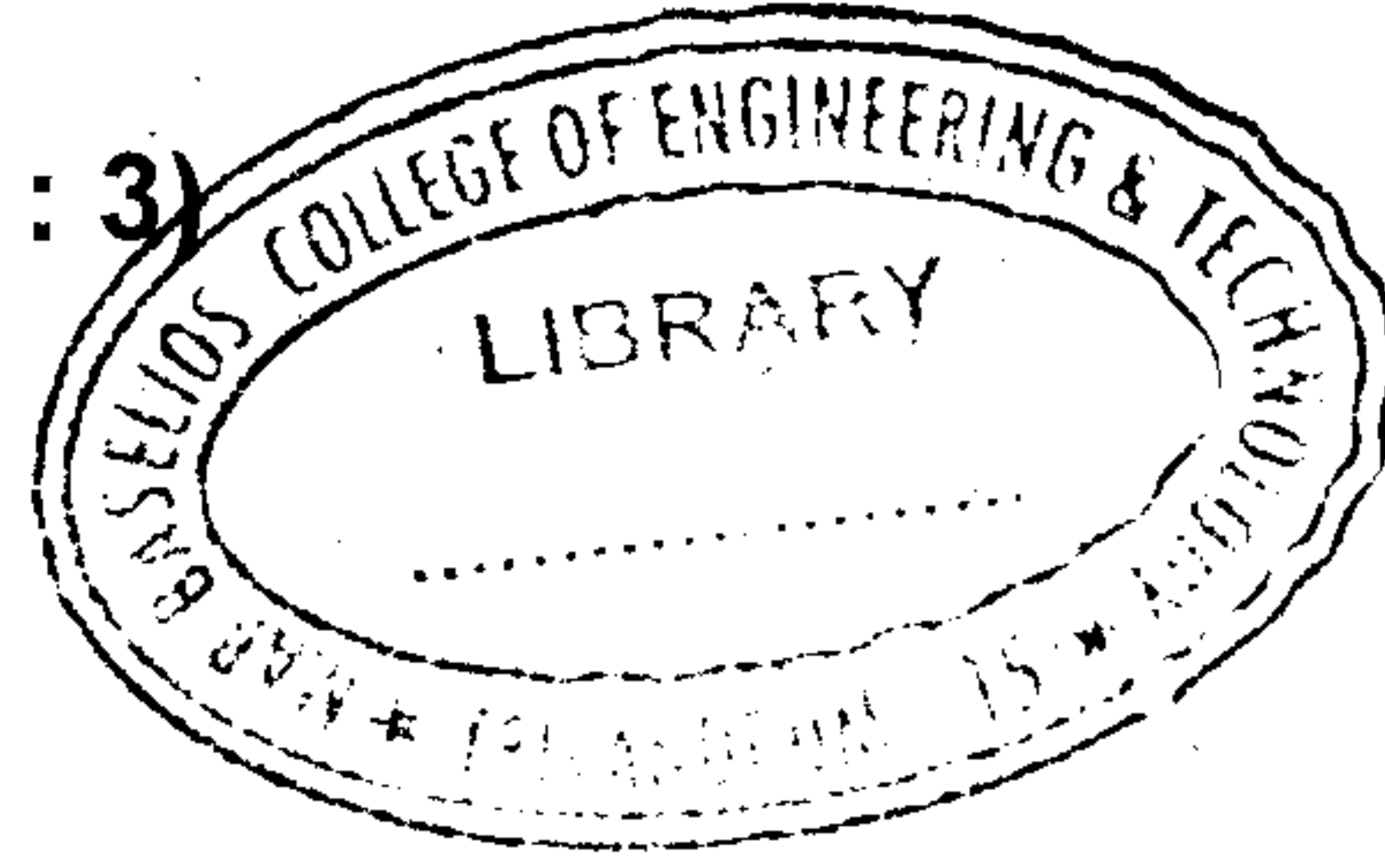


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G – 3364

Reg. No. :

Name :

**Fourth Semester B.Tech. Degree Examination, June 2019
(2008 Scheme)**

08.406 – OPERATING SYSTEMS (R)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. Differentiate time sharing and real time systems with explanation on where they are used in the real world.
2. Enumerate and briefly explain the various functions of an operating system.
3. Consider a system using linked allocation. How many read and write operations would be required to add a block or remove a block from a 50-block file given that the middle block is the 25th block?
 - (a) Add a block after the middle block
 - (b) Remove the middle block
4. With examples state the requirements to be satisfied by solutions to a critical-section problem.
5. Discuss the issues concerning SMP systems.

P.T.O.

6. Segmentation and paging are sometimes combined into one scheme. Which among the following is not a valid reason for this combination? State the reason against each option.
- (a) Page table size is reduced
 - (b) No external fragmentation
 - (c) No internal fragmentation
 - (d) Allocation is simplified
7. In what circumstances is overlay useful? How does overlay affect program development time?
8. Diagrammatically show the moving head disk mechanism in a hard disk.
9. Suggest means to recover from a deadlock.
10. What is the need to provide protection?

(10 × 4 = 40 Marks)

PART – B

Answer **any one** full question from each module.

Module – I

11. (a) Explain the different structures by which the operating system components interconnect and meld into a kernel. 12
- (b) What are distributed and multiprocessor system? What functionalities should the operating system provide to such systems. 8

OR

12. (a) What are the issues that can arise when multiple users share files? If multiple users are writing to a file how are the user actions protected? 10
- (b) Describe the common schemes for defining the logical structure of a directory. 10

Module – II

13. (a) Explain the different process scheduling algorithms and tabulate their advantages and disadvantages. **10**

(b) The Big Fish Little Fish pet store is having some problems keeping their hamsters happy. Hamsters like to eat, sleep, and run their wheel. Hamsters must eat before running their wheel, so they have energy to run their wheel. Although many hamsters are kept in a single cage, only three can eat at the food dish at the same time and only one can run the wheel. After running the wheel, a hamster might sleep or it might eat again.

Assume you have three procedures `run_wheel`, `eat_food`, and `goto_sleep` which when called by a hamster, run the wheel for some period of time, eat for some period of time, and go to sleep for some period of time respectively. Write the procedure for the hamster using semaphores. **10**

OR

14. What is virtual memory? With suitable examples show how virtual memory can be implemented? **20**

Module – III

15. (a) On a disk with 1000 cylinders numbered 0 to 999, compute the number of tracks the disk arm must move to satisfy all the requests in the disk queue using the algorithms given. The disk head is at track 330.

(i) FIFO

(ii) SSTF

(iii) SCAN

Request Queue : 165, 58, 992, 490, 118, 356

10

(b) Write short notes on

(i) Virtual devices

(ii) Terminal I/O handling

10

OR

16. (a) Explain the ways to prevent deadlock. **8**

(b) With suitable algorithm explain how deadlocks can be detected. **12**

