Q.P. Code: 39914

(3 Hours) **Total Marks: 80**

N.B. 1) Question **no.1 is compulsory**
2) Solve any **Three** questions from remaining five.
3) Assume suitable data wherever required.

Q 1) a) What are the types of services provided by operating systems for the convenience of the programmer and also for the efficient operating of the system? (**10**)

b) Illustrate the principles of process scheduling, with necessary diagrams. (**10**)

Q 2) a) What is meant by critical section problem? What are the conditions to be satisfied by a solution to the problem? (**10**)

b) Illustrate the use of semaphores to deal with n-process critical section problem. (**10**)

Q 3) a) What are the necessary conditions for deadlocks? What are the methods for handling deadlocks? (**10**)

b) Illustrate the paging scheme of memory management, with an example. (**10**)

Q 4) a) Explain the file system layout. Discuss the issues in implementing file storage**.** (**10**)

b) Suppose w = 23 43 243 24 56 75 67 45 67 21 is a page reference stream. Assuming a page frame allocation of 3, how many page faults occur in optimal, FIFO, LRU. (**10**)

Q 5) a) What are the methods for selecting a disk scheduling algorithm? Explain the disk scheduling algorithms? (**10**)

b) Explain about preemptive and non preemptive strategies. (**10**)

Q 6) a) Explain the various protection and security mechanisms need to be implemented by Operating System. (**10**)

b) Classify and explain about the functions provided by an Operating System. (**10**)
