KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

MCA 3rd Sem. Examination, 2014

Paper : 10

Operating System

Time : 3 Hrs. Full Marks : 80

1. Answer any five from the following questions $2\times5 = 10$
   (a) What do you mean by Time Sharing System? What are its benefits?
   (b) What is a race condition?
   (c) Define Semaphone.
   (d) What is IPC and what are the issues involved in IPC?
   (e) What do you mean by Context Switch?
   (f) What is the concept of external fragmentation?
   (g) What is a Logic Bomb?

2. Answer any three from the following questions $4\times3 = 12$
   (a) What is Thrashing? What are the causes of Thrashing?
   (b) Explain the various requirements of solutions to Critical Section (CS) problem.
   (c) Differentiate between pre-emptive and non pre-emptive scheduling.
   (d) Write a brief note on the various operations on file.
   (e) What do you mean by Memory-Mapped I/O. Give the advantages and disadvantages of it.

3. Answer any three from the following questions $6\times3 = 18$
   (a) What are the services provided by an Operating System? Discuss briefly.

   (b) What is swapping? Discuss the concept of mono-programming and swapping with single-user memory partition.
   (c) What are the different techniques of file organization? Differentiate between Random Access and Sequential Access approach of file system.
   (d) What are the need of DMA technique? What are the major advantages over programmed and interrupt driven I/O?
   (e) What are the four major techniques of user Authentication. Explain each type briefly.

4. Answer any four from the following questions $10\times4 = 40$
   (a) What is a thread? Discuss briefly the different types of threads. What are the benefits of threads?
   (b) What are the necessary conditions for occurence of Dead lock? Discuss briefly the Banker's Algorithm for Dead lock avoidance.
   (c) What is paging? Discuss any three page replacement Algorithm.
   (d) Discuss briefly the three types of scheduling. Write notes on FCFS and SJF scheduling algorithm.
   (e) What are the basic principles of I/O management? What are the problems in I/O device management?
   (f) What is cryptography? Discuss briefly the symmetric key Encryption and public key encryption technique.