BACHELOR IN COMPUTER APPLICATIONS

Term-End Examination

June, 2008

CS-63 : INTRODUCTION TO SYSTEM SOFTWARE

Time : 2 hours   Maximum Marks : 60

Note : Question number 1 is **compulsory.** Answer any **three** questions from the rest.

1. (a) Write an algorithm and draw the corresponding flow chart to check whether the number is an automorphic number. **6**

    (Hint : Square of the given number contains the number in the end. Example : 6, 36

                                     5, 25)

    (b) Consider the following set of processes that arrive in the ready queue at the same time :

Process	CPU Time
S1	4
S2	6
S3	3
S4	1
S5	5

    Consider the following scheduling algorithms :

        FCFS, SJF, RR (Quantum = 2).

    Calculate the average turnaround time and average waiting time for the above algorithms. **9**

(c) Write a shell program to swap the values of two variables. 6

(d) Generate Parse Trees for the following : 6

    (i) The boy ate an apple.

    (ii) $9 * 7 + 5 - 2$

(e) Write regular expressions for a set of strings including : 3

    {d, abd, cd, abcd}

2. (a) Write a shell program to find whether the given number is prime or not. 5

   (b) Explain the various phases of compiler design. 5

3. (a) What is concurrency ? How does Mutual Exclusion help in efficient synchronization of simultaneously executing processes ? Are there any problems in Mutual Exclusion ? If yes, what are the solutions to it ? 6

   (b) Draw and explain the File structure of UNIX. 4

4. (a) List and explain at least eight important qualities of software product. 6

   (b) Explain the important components of a Graphical User Interface operating system. 4

5. (a) What is Process Scheduling ? What are the various performance criteria that schedulers seek to consider to maximise system performance ? How does UNIX schedule its processes ? 6

(b) Explain the features of LEX and YACC. 4