BACHELOR IN COMPUTER APPLICATIONS

Term-End Examination

December, 2007

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 regular expressions for 8

(i) A set of strings including
{d, abd, cd, abcd}

(ii) A set of strings x's, y's and z's.
For example {xxx, xxy, xxz, ... zzz}

(b) Write an algorithm that accepts as input a decimal number and converts it into octal representation and also draw the corresponding flow chart for the same. 7

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

Process	CPU time
P1	8
P2	12
P3	7
P4	9
P5	4

Consider the following scheduling algorithms :

FCFS, SJF and Round robin (quantum = 2)

(i) What is turnaround time of each process for each of the above scheduling algorithms ? Also, find the average turnaround time.

(ii) What is waiting time of each process for each of the above scheduling algorithms ? Also, find the average waiting time. *8*

(d) Write a shell program to find whether a given number is an Avogadro number or not. *7*

(e.g. 153 is Avogadro no. as $153 = 1^3 + 5^3 + 3^3$)

2. (a) What are the important tasks performed during : *6*

- Lexical analysis
- Syntax analysis
- Semantic analysis

(b) What is the usefulness of context free grammar ? Explain with an example. *4*

3. (a) Describe how fixed records I/O and variable length records I/O are implemented in UNIX system. *5*

(b) What are the main advantages of distributed operating systems ? How are the file system and the protection supported in distributed operating systems ? 5

4. (a) Write UNIX commands for the following : 5

(i) To change the password for a given user.

(ii) Concatenate the contents of 3 files into a single file.

(iii) To run a particular command at the given time.

(iv) To display hard disk space used.

(v) To display the lines that do not include the given string.

(b) Illustrate and discuss with a diagram, the address mappings in a paging system and a segmented system. 5

5. (a) With the help of any GUI-based operating system, explain the major components of its environment. 4

(b) Explain the following concepts : 6

(i) Symbol Table

(ii) Case Tools

(iii) 4 GLs