

# BACHELOR IN COMPUTER APPLICATIONS

Term-End Examination

December, 2007

## CS-63 : INTRODUCTION TO SYSTEM SOFTWARE

Time : 2 hours

Maximum Marks : 60

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

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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

