PGDCA / MCA (I Yr) / BCA

Term-End Examination

June, 2008

CS-02 : INTRODUCTION TO SOFTWARE

Time : 2 hours   Maximum Marks : 60

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

1. (a) Design an algorithm and draw a corresponding flow chart to check whether a given year is a leap year or not. 7

   (b) List the conditions that characterize a deadlock. Explain the occurrence and avoidance of deadlock graphically among 3 processes and 3 resources. 7

   (c) Write a shell program to calculate $\frac{x^n}{n!}$ where $n > 0$. 8

   (d) What is a debugging system ? Describe the functions and capabilities of an interactive debugging system. 8

2. (a) Define the main differences between Network operating system and Distributed operating system. 4

   (b) Construct a Context Free Grammar for the following 'C' statements : 6

      (i) Arithmetic Expression

      (ii) For Loop

3. "In multiprogramming environment, sharing of code and data can greatly reduce the real storage needed by a group of processes to run efficiently." For each of the following types of systems, outline briefly how sharing can be implemented :

   (i)   Partition   4

   (ii) Paging   3

   (iii) Segmentation   3

4. (a) What is a system call ? Give four different examples of system calls in UNIX operating system.   5

   (b) Write a shell program to display the alternate digits in a 4 digit decimal number.   5

   (example : 5694

   – 5, 9 are alternate digits

   • 6, 4 are alternate digits)

5. (a) What is the basic purpose of program control ? Explain the significance of Gantt chart and PERT charts with an example for each.   6

   (b) What is the basic philosophy of X-Windows ? How is it different from rest of the GUIs ?   4