

**BACHELOR OF COMP. SC. & ENGINEERING EXAMINATION, 2010**

(3rd Year, 1st Semester)

**SYSTEMS PROGRAMMING**

Time: 3 hours

Full Marks: 100

Answer **Question No. 1** and  
Any **FOUR (4)** questions from the rest

1.

- What do you understand by system program?
- What is linking?
- What does a Process Control Block (PCB) contain?
- What are the differences between hardware and software interrupt?
- Differentiate between direct and indirect memory addressing mode with proper example.
- What do you mean by far and near addressing?
- What are the differences between .com and .exe file

2+3+5+3+3+2+2

2.

- Write an assembly language program to find the number of occurrences of "s" from an input string named "Systems Programming"
- Describe the utilities of macro library and write down the constraint(s) needed to be checked during writing the library.
- Describe different flag registers of 8086 with suitable examples.
- Differentiate between REPE and REPNE with proper example.
- Write down the methodology to run a program in debug.
- What do you mean by typematic rate?

5+4+4+3+3+1

3.

- Write the process of calling a procedure from one file to another with proper example.
- Write the utilities purge directive with appropriate example
- Write a function in 8086 assembly language which takes two arguments, one integer and one character and return the differences (between them) in integer format.
- Write a program in 8086 assembly language to find HCF of four (4) 16 bit numbers. The numbers should be taken as input from user and stored in an array.

5+2+3+10

4.

- What are the differences between a macro and procedure?
- Describe the utilities of different keyboard interrupt function numbers with their corresponding interrupt for taking input from keyboard buffer.
- Write a program in 8086 Assembly language that will take ten (10) numbers as input from user and sort them using Bubble sort algorithm.

4+6+10

5.

- a. Calculate turnaround time of each process (from the following information) using First Come First Served (FCFS) scheduling policy.

<u>Process</u>	<u>Arrival Time</u>	<u>Execution time</u>
P0	0	7
P1	1	2
P2	2	13
P3	3	5
P4	4	9

(Turnaround time: total time from arrival till end of execution)

(Show the Gantt chart.)

- b. Mention the advantages and disadvantages of FCFS.  
c. What is a process? What does process state diagram describe?

 $10+4+(2+4)$ 

6.

- a. Explain the working of "one and a half pass" assembler with respect to the following assembly language program:

- b. What are the advantages of "one and a half pass" assembler?

- c. What are the disadvantages of "two pass" assembler?

- d. What are the disadvantages of absolute loader?

 $12+3+3+2$ 

7.

- a. What is program relocation? Under which situation may program relocation be required?  
b. What is loading? What are the differences in working between a linkage editor and a linking loader?  
c. What are the different steps in compilation? Explain briefly.

 $(2+3)+(2+5)+8$ 

8. Write short notes on any two of the following:

 $10 \times 2$ 

- a. Macro processor  
b. One pass assembler  
c. BIOS keyboard data area