Bachelor of Computer Science & Engg. Examination, 2013 (Suppl.)

(3rd Year, 1st Semester)

SYSTEMS PROGRAMMING

Time: 3 hours   Full Marks: 100

All Questions are to be answered in the same Answer script
Answer Question No. 1 and
ANY TWO questions each from GROUP-A and GROUP-B
Answers to different parts of same question must be contiguous

1.
   a) Write the utilities of scan code.
   b) Write a function to check whether Numlock state is active or not.
   c) Write the structure of instructions to take a string input in assembly language.
   d) Write a set of instructions to adjust telematics delay of a keyboard.
   e) Is inclusion of "#pragma inline" mandatory to run a set of assembly language statements
       in C program? Justify with proper example.
   f) What is meant by process scheduling?
   g) What is linking?
   h) What are the disadvantages of a one-pass macroprocessor?
   i) What are the advantages of a one-pass assembler?

                                                        1+2+2+2+3+2+3+3+2

GROUP – A

2.

   a. Describe the utilities of the following macros/preprocessor directives with   2*5=10
       proper example
          1. IRPC
          2. REPT
          3. EQU
          4. IFE
          5. IFIDN

   b. Find out how many values is less than 25h and how many values are greater   10
       than 40h among an array of ten numbers. Array should be user given input.

3.

   a. Describe the utilities of the following command in Debug environment with   2*5=10
      proper example

         1. U
         2. S
         3. M
         4. F
         5. E

   b. Describe the name of different segments which are supported by MASM   2
      environment.

   c. Write a program to convert a 16 bit binary data into its equivalent Hexadecimal   8
      number. The binary data should be taken from the user with all constraint.

4.

   a. Describe the utilities of INT 09h and Keyboard buffer with proper diagram   8
      during taking an input from a keyboard
   b. Write the set of instructions for INT16 function 10h to accept a keystroke; if,   4
      Page Down, set the cursor to column 5 , row 20
   c. Write an assembly language programming to count the number of occurrences   8
      of a given character within a given string.

5.

   a. Describe the differences between .exe. and .com file   3

   b. How do you convert an. exe file into .com format   2

   c. Describe the methodology to include a header file within MASM   2
      environment.

   d. Differentiate between fixed and variable port addressing with proper example   3

   e. Write an assembly language programming to implement Bubble sort.   10

GROUP - B

1. What are the different steps in compilation? Explain.
b. What are the differences between an assembler and a compiler?
c. What are the inputs to an assembler? What outputs does an assembler produce?

$$10+3+7$$

7.
a. How does a 2-pass assembler work? Explain in details and mention the various data structures used by the assembler.
b. What are the different types of references that can occur in a program? Explain with suitable examples.

$$12+8$$

8.
a. What are the tasks of a relative or relocating loader?
b. How is a macro definition processed?
c. How is a macro call handled?

$$6+7+7$$

9.
Write short notes on any two of the following:
   a. Round Robin scheduling, First Come First Serve scheduling
   b. Best fit allocation, First fit allocation
   c. Static fixed equal size partitioned allocation, Static fixed unequal size partitioned allocation
   d. One pass assembler
   e. Linking loader

$$10*2$$