Second Semester MCA Degree Examination, Dec.2016/Jan.2017
System software / System Programming

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a.   Bring out the differences between system software and application software.   **(04 Marks)**
    b.   Explain SIC/XE machine instruction formats and all the addressing modes clearly indicating setting of flag bits.   **(10 Marks)**
    c.   Write an assembly language program in SIC/XE to add 2 arrays of 100 integers.   **(06 Marks)**

2   a.   Write a algorithm for pass – 1 of 2 – pass algorithm. Describe the data structures used.   **(10 Marks)**
    b.   Write short notes on program blocks feature of assembler.   **(04 Marks)**
    c.   Generate object code for given SIC program

```
WRDATA   START    1000
         LDX      ZERO
WLOOP    TD       OUTPUT   LDX – 04   TD – E0
         JEQ      WLOOP    JEQ – 30   LDCH – 50
         WD       OUTPUT   WD – DC    TIX  – 2C
         TIX      LENGTH              JLT – 38
         JLT      WLOOP
ZERO     WORD     0
OUTPUT   BYTE     X '05'
LENGTH   RESW     1
BUFFER   RESB     409.6
```
                                                                             (06 Marks)

3   a.   Explain the program of bootstrap loader.   **(10 Marks)**
    b.   Write and explain the pass – 1 algorithm of a linking loader along with data structures.   **(10 Marks)**

4   a.   With a neat diagram, explain the concept of dynamic linking.   **(10 Marks)**
    b.   Write short notes on :   i) Linkage editor   ii) MS – DOS Linker.   **(10 Marks)**

5   a.   With a neat block diagram, describe the typical editor structure.   **(10 Marks)**
    b.   Describe the debugging functions and capabilities of interactive debugging system.   **(10 Marks)**

6   a.   What do you mean by a MACRO? Explain macro definition and expansion with suitable example.   **(10 Marks)**
    b.   Write a note on the following machine independent feature of microprocessor.
         i) Concatenation of macro parameters   ii) Generation of unique labels.   **(10 Marks)**

7   a.   Explain conditional macro expansion with an example.   **(10 Marks)**
    b.   Write algorithm for one – pass macroprocessor.   **(10 Marks)**

8   a.   Explain the basic compiler functions.   **(10 Marks)**
    b.   Write a note on : i) P – code compilers   ii) Compiler – Compilers.   **(10 Marks)**

* * * * *