M.S.Ramaiah Institute of Technology

Department of Information Science & Engineering **MOBILES ARE BANNED**
(Autonomous Institute, affiliated to VTU)

System Software (IS612)

CIE TEST No: I Semester: VI Sections: **A, B & C**

Max. Marks: 30 Time: 12:00-1:00PM Date: 26.02.2014

Answer the following. Each carries 10 Marks.

	PART-A(Any TWO)
1	Define system software. Discuss the architecture of SIC/XE machine.
2	a) Develop a SIC machine program to sum up all the elements of a one-dimensional array of size 4. b) Discuss with an example why do SIC/XE machine needs modification record.
3	a) Design pass-1 algorithm of two-pass assembler. b) Suppose COPY is the name of the program written for SIC machine and its length is 0026. Write the object program for the COPY which has the following machine codes: **Loc** **Object code** 1000 141033 1003 482039 1006 001036 1009 281030 100C 301015 100F 482061 1012 3C1003 1015 00102A 1018 0C1039 101B 05 101C 0C1036 101F 482061 1022 08 1023 4C0000
	PART-B(Any ONE)
4	Generate the symbol table and the object code(each statement)for the following assembly language program- **Opcodes** CLEAR: B4 STL: 14 LDB: 68 JSUB: 48 LDA: 00 STA: 0C J: 3C SUM START 0 FIRST CLEAR S STL TEMP LDB #5 +JSUB RESULT LDA =C'EOF' STA LOC , X J @NUM NUM RESW 1 TEMP WORD 20 LOC BYTE X'12'

```
RESULT    RESB  2
          END   SUM
```

P.T.O

5 Generate the object code for each statement in the following assembly language program. Write the modification record for the instructions which need.

Opcodes

STA:	0C
LDA:	00
COMP:	28
JSUB:	48
J:	3C
ADD:	18

```
RESULT    START     0
            EXTDEF  T1
            EXTREF  T3,READ
FIRST     + STA     T3
LOOP      LDA       T1
            COMP    #0
          + JSUB    READ
            J       @T2
T1        RESW      4
T2        RESB      6

READ      CSECT
          EXTDEF    T3,T4
           EXTREF   T1
           LDA      T3
        + ADD       T1
          STA       T4
        + COMP      #4096
T3      BYTE        X'05'
T4      BYTE        C'AB'
        END         FIRST
```