**Mobile phones are banned**

**M S Ramaiah Institute of Technology**

**Department of Information Science and Engineering**

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| **Term:** | 23/01/2017 to 13/05/2017 | **Course Code:** | IS631 |
| **Course:** | System Software | **Semester:** | 6 |
| **CIE:** | Test I | **Max Marks:** | 30 |
| **Date:** | **27/02/17** | **Time:** | **9 :30 –10:30 AM** |

**Portions for Test:** Lecture Nos. from 1 to 17 as per lesson plan

**Instructions to Candidates:** Answer any **Two** out of Three questions.

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| --- | --- | --- | --- | --- |
| **Sl No** | **Questions** | **Marks** | **Blooms Level** | **CO** |
| **1.a)** | I)Discuss the following architecture components of SIC/XE machine  i)Registers ii) Input and Output instruction | **(03)** | **U** | **CO1** |
|  | II)Generate the Object code for SIC machine    COPY START 1000 **OPCODE TAB**  MOVECH LDX STR1,X LDX 04  STCH STR2,X STCH 54  TIX THREE TIX 2C  JLT MOVECH JLT 38    STR1 BYTE C’ABC’  STR2 RESB 3  ZERO WORD 0  THREE WORD 3  END | **(05)** | **A** | **CO1** |
| **b)** | Illustrate with an example the machine dependent features of program relocation. | **(07)** | **U** | **CO2** |
| **2 a)** | I)Illustrate the role of the flag bits n ,i, x in addressing modes of Format 3 and 4 of SIC/XE instructions.  II)Suppose FILE is the name of the program written for SIC machine and its length is 0029.Write the object program for the following object codes   |  |  | | --- | --- | | **LOC** | **Object code** | | 2000 | 141033 | | 2003 | 482039 | | 2006 | 001036 | | 2009 | 281030 | | 200C | 301015 | | 200F | 482061 | | 2012 | 3C1003 | | 2015 | 00102A | | 2018 | 0C1039 | | 201B | 05 | | 201C | 0C1036 | | 201F | 482061 | | 2022 | 08 | | 2023 | 4C0000 | | 2026 | 0C1020 | | **(09)** | **A** | **CO1** |
| **b)** | Provide the format of the modification record. With suitable illustrations indicate why modification records are generated only for Format 4 instructions. | **(06)** |  | **CO2** |
| **3 a)** | Design pass-2 algorithm of two-pass assembler. | **(07)** | **U** | **CO1** |
| **b)** | 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 | |  | LDB | #5 | |  | +JSUB | RESULT | |  | STA | LOC,X | |  | J | @NUM | | NUM | RESW | 1 | | TEMP | WORD | 20 | | LOC | BYTE | X’12’ | | RESULT | RESB | 2 | |  | END | SUM | | **(08)** | **A** | **CO2** |

**# U:Understand, A:Apply**