**Mobile phones are banned**

**M S Ramaiah Institute of Technology**

**Department of Information Science and Engineering**

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| **Term:** | 22/01/2018 to 12/05/2018 | **Course Code:** | IS631 |
| **Course:** | System Software | **Semester:** | 6 |
| **CIE:** | Test II | **Max Marks:** | 30 |
| **Date:** | **05/04/2018** | **Time:** | **9 :30 –10:30 AM** |

**Portions for Test:** Lecture Nos. from 18 to 33 as per lesson plan

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

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| **Sl No** | **Questions** | **Marks** | **BL** | **CO** |
| **1a.** | Given the following SIC program, write the object code as produced by one pass load and go assembler. Also given are the opcodes as follows: STL-14,JSUB-48, LDA-00, COMP 28, JEQ-30, J-30, STA-0C, LDL-08, RSUB-4C. RDREC is at location 203D and WRREC is at location 2062. Show the changes made in the symbol table.   |  |  |  | | --- | --- | --- | | COPY | START | 0000 | | EOF | BYTE | C’ABC’ | | THREE | WORD | 3 | | ZERO | WORD | 0 | | RETADR | RESW | 2 | | LENGTH | RESW | 6 | | BUFFER | RESB | 4096 | | FIRST | STL | RETADR | | CLOOP | JSUB | RDREC | |  | LDA | LENGTH | |  | COMP | ZERO | |  | JEQ | ENDFIL | |  | JSUB | WRREC | |  | J | CLOOP | | ENDFIL | LDA | EOF | |  | STA | BUFFER | |  | LDA | THREE | |  | STA | LENGTH | |  | JSUB | WRREC | |  | LDL | RETADR | |  | RSUB |  | | **6** | **Ap** | **2** |
| **1b.** | Provide the output of the relocation loaders given that the starting address given by the operating system is 5000.  **Input File:**  H^PROG^000000^001077  T^000045^12^AC0^141033^481039^901776^921765^345610^571765  T^001111^0F^F00^232838^432979^892060^662849^340000  E^000000 | **5** | **Ap** | **3** |
| **1c.** | Discuss the data structures used in a one-pass macro processors. | **4** | **U** | **4** |
| **2a.** | Briefly discuss how two pass assemblers handle  i. Program Blocks  ii. Expressions | **4** | **U** | **2** |
| **2b.** | For the below given object program indicate the data loaded into the main memory by the linking loaders. Also given below is the external symbol table.  H^pa ^000000^000053  T^000020^0A^03201D^77100004^050014  T^000044^0F^000014^FFFFF6^00003F^000014^FFFFC0  M^000024^05^+lb  M^000044^06^+lc  M^000047^06^+ec  M^000047^06^-lc  M^00004A^06^+ec  M^00004A^06^-lc  M^00004A^06^+pa  M^00004D^06^-eb  M^00004D^06^+lb  M^000050^06^+lb  M^000050^06^-pa  E^000020   |  |  |  |  | | --- | --- | --- | --- | | Control Section | Symbol Name | Address | Length | | pa |  | 4000 | 0053 | |  | la | 4030 |  | |  | ea | 4044 |  | | pb |  | 4053 | 007F | |  | lb | 40B3 |  | |  | eb | 40C3 |  | | pc |  | 40D2 | 0051 | |  | lc | 4102 |  | |  | ec | 4114 |  |   Elaborate on the process of generation of data to be loaded into the main memory for execution by the linking loaders. | **7** | **Ap** | **3** |
| **2c.** | Discuss the EXPAND procedure of the one pass macro processors. | **4** | **U** | **4** |
| **3a.** | Explain the working of multi-pass assemblers for the given input.  HSZ EQU M/2  M EQU A  PVT EQU B-3  B RESB 4096  A EQU \*  Given that the location counters value of B is 4052. | **4** | **Ap** | **2** |
| **3b.** | What is dynamic linking? Describe the process of loading and calling of a subroutine using dynamic linking. | **6** | **U** | **3** |
| **3c.** | Indicate how the following is handled  i. macro definition in SIC/XE  ii. macro expansion in SIC/XE | **5** | **U** | **4** |