**M S RAMAIAH INSTITUTE OF TECHNOLOGY**

(Autonomous Institute, affiliated to VTU)

**DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING**

|  |  |  |  |
| --- | --- | --- | --- |
| **Term:** | 23.01.2017 to 13.5.2017 | **Course Code:** | IS631 |
| **Course:** | System Software | **Semester:** | VI – A, B & C |
| **CIE:** | Test – II | **Max Marks:** | 30 |
| **Date:** | 03-04-2017 | **Time:** | 9.30am – 10.30am |

**Portions for Test:** Lecture Nos. from L18 to L34 as per lesson plan.

**Instructions to Candidates:** Answer any two full questions.

**Note:** Mobiles and Programmable Calculators are strictly prohibited.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl No** | **Questions** | **Marks** | **B L** | **CO** |
| **1a)** | Differentiate between linkage editor and linking loader. | **03** | **An** | **CO2** |
| **1b)** | Given the following object program with relocation bit mask, write the contents of the memory locations given the starting address as 3000  H COPY 000000 0103D  T 000000 18 ED0 140033 481039 000036 280030 300015 481061 3C0003 00002A  T 000018 15 E00 0C0036 481061 080033 4C0000 454F46 000003 000000  T 001033 0A 800 100036 4C0000 F1 001000  E 000000 | **05** | **A** | **CO3** |
| **1c)** | Explain Multipass assemblers with an example. | **07** | **U** | **CO2** |
| **2a)** | Given the following ESTAB and the object program depict the contents of the memory  **ESTAB:**   |  |  |  |  | | --- | --- | --- | --- | | Control Section | Symbol name | Address | Length | | PROGA |  | 3000 | 0045 | |  | LISTA | 3030 |  | |  | ENDA | 3044 |  | | PROGB |  | 3045 | 0054 | |  | LISTB | 3053 |  | |  | ENDB | 3083 |  | | PROGC |  | 3099 | 0051 | |  | LISTC | 4001 |  | |  | ENDC | 4010 |  |   **Object Program**:  H PROGA 000000 000045  D LISTA 000030 ENDA 000044  R LISTB ENDB LISTC ENDC  .  T 000020 0A 03201D 77100004 050014  .  T 000037 0F 000014 FFFFF6 00003F 000014 FFFFC0  M 000024 05+LISTB  M 000037 06+LISTC  M 00003A 06+ENDC  M 00003A 06-LISTC  M 00003D 06+ENDC  E 000020 | **08** | **An** | **CO3** |
| **2b)** | Describe the working of load and go assembler. | **07** | **U** | **CO2** |
| **3 a)** | Given the following SIC program, write the object program as produced by one pass assembler given 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.   |  |  |  |  | | --- | --- | --- | --- | | Loc |  |  |  | | 1000 | COPY | START | 1000 | | 1000 | EOF | BYTE | C’EOF’ | | 1003 | THREE | WORD | 3 | | 1006 | ZERO | WORD | 0 | | 1009 | RETADR | RESW | 1 | | 100C | LENGTH | RESW | 1 | | 100F | BUFFER | RESB | 4096 | | 200F | FIRST | STL | RETADR | | 2012 | CLOOP | JSUB | RDREC | | 2015 |  | LDA | LENGTH | | 2018 |  | COMP | ZERO | | 201B |  | JEQ | ENDFIL | | 201E |  | JSUB | WRREC | | 2021 |  | J | CLOOP | | 2024 | ENDFIL | LDA | EOF | | 2027 |  | STA | BUFFER | | 202A |  | LDA | THREE | | 202D |  | STA | LENGTH | | 2030 |  | JSUB | WRREC | | 2033 |  | LDL | RETADR | | 2036 |  | RSUB |  | | **(07)** | **An** | **CO2** |
| **b)** | Write an algorithm with documentation for a bootstrap loader for SIC/XE machine. | **(08)** | **U** | **CO3** |