Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **14CS2045** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SYSTEM SOFTWARE** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Write the sequence of Instructions for SIC to set ALPHA equal to the product of BETA and GAMMA. | CO2 | 5 |
| b. | Describe the SIC/ XE machine architecture in detail in terms of its memory, instruction formats, instruction set and addressing modes. | CO2 | 15 |
| (OR) | | | | |
| 2. | a. | What is a system software? List the functions of system software. Mention the types of system software with a brief note on each type. | CO2 | 10 |
| b. | Compare and contrast RISC with CISC machines. Illustrate the working principle of CrayT3E architecture with a neat sketch. | CO2 | 10 |
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| 3. | a. | Consider the following source code and do the following:  TEST START 4000  FIRST LDA C  MUL SEVEN  DIV FOUR  ADD TWENTYONE  STA F  C RESW 1  F RESW 1  SEVEN WORD 7  FOUR WORD 4  TWENTY WORD 20  END FIRST  OPCODE TABLE  -----------------------  LDA 00  MUL 20  DIV 24  ADD 18  STA 0C   1. Generate the object code for each statement in the following SIC source program. 2. Write the object program for the above one and discuss about the different types of records in the object program. | CO3 | 10  5 |
| b. | Give a detail description on the data sructures used by the assembler. | CO3 | 5 |
| (OR) | | | | |
| 4. | a. | Demonstrate how multi pass assembler handles the following forward reference problem.  1 HALFSZ EQU MAXLEN/2  2 MAXLEN EQU BUFFEND-BUFFER  3 PREVBT EQU BUFFER-1  4 BUFFER EQU 4096  5 BUFEND EQU \*  Assume that when assembler goes to line 4 the equivalent hexadecimal value for 4096 is 1034 | CO3 | 12 |
| b. | Appraise the following machine independent assembler features with suitable example.   1. Program Blocks 2. Control Sections | CO3 | 8 |
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| 5. | a. | With diagrams, explain how loading and calling of subroutine is done using dynamic linking. | CO3 | 10 |
| b. | Summarize the working principles of 2 pass loader and data structures used. | CO3 | 10 |
| (OR) | | | | |
| 6. | a. | Mention the various loader design options. Illustrate in detail about linkage editors and dynamic linking | CO3 | 10 |
| b. | Write the bootstrap loader algorithm and Explain in detail | CO3 | 10 |
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| 7. | a. | Outline the working principle of the one pass macro processor with algorithm and mention the data structures used. | CO3 | 15 |
| b. | Give a detailed note on recursive macro expansion | CO3 | 5 |
| (OR) | | | | |
| 8. | a. | Is it possible to define macros within the body of another macro? If yes how many passes are required to process such macros using a macro processor? Justify your answer with an example. | CO3 | 10 |
| b. | Consider the following macro definition “SAMPLE”.  SAMPLE MACRO &DEV, &BUF, &CODE.  . MEND  State the difference between the following three macro invocations and discuss in detail.  SAMPLE A7, LOC, R  SAMPLE A7, , R  SAMPLE DEV=A7, BUF=LOC, CODE=R | CO3 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Elucidate the overview of the editing process and discuss about user interface. | CO1 | 10 |
| b. | Explain the three levels of data abstraction in database management systems with appropriate examples. | CO1 | 10 |