BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE   SEMESTER: VI
BRANCH: CSE   SESSION: SP/2020

SUBJECT: CS6103 SYSTEM PROGRAMMING

TIME: 1.5 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.
6. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q1 (a) Name and define the various Systems Software that are involved in converting a high-   [2]
         level language program (e.g. test.c) into a final executable (e.g. test.exe). Give the
         proper sequence.
    (b) The variables ALPHA, BETA and GAMMA are arrays of 100 words each. Write a subroutine   [3]
         in SIC/XE to add together the corresponding elements of ALPHA and BETA and store the
         results in the elements of GAMMA

Q2 (a) Differentiate between RISC and CISC systems   [2]
    (b) Discuss the SIC(XE) instruction formats and significance of each bits.   [3]

Q3 (a) Design the algorithm for Pass 2 in two pass assembler.   [2]
    (b) Enhance and comment on your design to deal with the issues of modification of records. [3]

Q4 (a) "Control section can be loaded and relocated independently". Justify.   [2]
    (b) Write the object program for the following SIC/XE code. The operation codes for the   [3]
         instructions are LDT=74, LDA=00, ADDR=90, SUB=1C, STA=0C and the addresses for
         registers A and T are 0 and 5 respectively.

             START 0058
             LDT   NUM
             LDA   ALPHA
             ADDR T, A
             SUB   #8
             STA   SUM1
             LDA   GAMMA
             ADDR T, A
             SUB   #12
             STA   SUM2

             ALPHA RESW 1
             SUM1   RESW 1
             GAMMA RESW 1
             SUM2   RESW 1
             NUM   RESW 1

Q5 (a) State and explain machine independent assembler features   [2]
    (b) What data structure should be mandatory to write a *dis-assembler?* Explain in brief.   [3]

Q6 (a) Discuss the how two pass assembler works in pass 1 using suitable example. Show the   [2]
         intermediate tables created after Pass1.
    (b) Write short notes on SPARC Assembler   [3]

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