Government College of Engineering, Amravati

(An Autonomous Institute of Government of Maharashtra)

Fifth Semester B. Tech. (CS/IT)

Winter – 2015

Course Code: CSU501

Course Name: System Programming

Time: 2 Hrs. 30 Min.* **Max. Marks: 60***

Instructions to Candidate

1) All questions are compulsory.
2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.

1. Solve any two.

a) Describe general machine structure. Draw micro-flowchart for the IBM 360 instruction S (subtract, RX form) 6M

b) Illustrate the IBM 360 machine data format. Clarify the use of IBM 360 machine register in formation of addressing memory locations. 6M

c) What is the difference in function between the BALR and USING instructions? Explain with proper example program? 6M

2. Solve any two.

a) Write an assembly language program to sum the 6M

Contd..

following series and find its equivalent machine translated program.

$2+4+6+8 \ldots\ldots 20$

b) Write an assembly language program to solve the following mathematical equation and generate the Machine-op Table, Symbol Table, and Literal Table. 6M

RESULT = ((5^2 - FIVE) + (10^2 – TEN)) / (20^2 – TWENTY)

Where RESULT is symbol store result of equation. FIVE, TEN and TWENTY are symbols contain value 5, 10 and 20 respectively. 5, 10 and 20 are the literals.

c) Draw pass 2 overview design of assembler. Write the purpose and data bases used in pass 2. 6M

3. **Solve any two.**

a) Show the result each pass for the following list using shell sort, radix sort and address calculation sort 6M

14, 07, 21, 04, 32, 17, 28, 08, 12, 23

b) Draw pass 1 processing macro definition and illustrate the format of data structure used in pass 1. 6M

c) Why assembly language programmer used macros? Explain macro call within macros and macro instruction defining macros. 6M

4. **Solve the following.**

a) To demonstrate Direct Linking Loader, write IBM 360 assembly language program, subroutine name is MAIN which store length of two side of 6M

rectangle in registers number 3 and 4. Subroutine MAIN call the another subroutine AREA which calculate area of rectangle and store the calculated area in register 5. Subroutine MAIN store the calculated area in internal symbol RESULT. Find out contents of ESD, TXT and RLD cards.

b) Which are the Asynchronous operations in high level language? Explain with example. 6M

Solve the following.

5. Define each of the following methods for

a) parameter passing and describe implementation for run-time storage management by: 6M

i) Call by value
ii) Call by reference

b) Determine the technique needed to implement dynamic storage allocation depend on how storage is deallocated. 6M