BTS–V(S)–(11.20/04.21)–1651 Reg. No. | | | | | | | | |

C



# *B.Tech. Degree V Semester Supplementary Examination*
# *November 2020/April 2021*

## CS 15-1502 SYSTEM PROGRAMMING
*(2015 Scheme)*

Time: 3 Hours Maximum Marks: 60

### PART A
(Answer *ALL* questions)

(10 × 2 = 20)

I. (a) Write the advantages of two pass assembler over one pass assembler.

(b) Explain the role of Mnemonic Opcode Table, Symbol Table, Literal Table and POOL Table in assembling process of assembly language program.

(c) List out the machine independent features of assemblers.

(d) Write down the algorithm for an absolute loader.

(e) Differentiate linking loader with linkage editor.

(f) What is Macro? Why do we use macro?

(g) Write a short note on Conditional macro expansions.

(h) Show how the macro processors allow the generation of unique labels.

(i) Briefly explain different types of multiprocessor operating systems.

(j) Write a short note on run time environment and user interface.

### PART B

(4 × 10 = 40)

II. (a) Briefly explain the basic assembler directives. (5)

(b) Write down the pass 1 algorithm for a 2 pass assembler. (5)

**OR**

III. Apply 2 pass algorithm to assemble the following SIC source program and generate object program. (10)

```
SUM     START   3000
FIRST   LDX     ZERO
        LDA     ZERO
LOOP    ADD     TABLE, X
        TIX     COUNT
        JLT     LOOP
        STA     TOTAL
        RSUB
TABLE   RESW    2000
COUNT   RESW    1
ZERO    WORD    0
TOTAL   RESW    1
        END     FIRST
```

Machine code equivalents: LDX = 04, LDA = 00, ADD = 18, TIX = 2C, JLT = 38, STA = 0C.

**(P.T.O.)**

IV. Write down the algorithm for a linking loader with necessary data structures. (10)

**OR**

V. (a) Briefly explain boot strap loader algorithm. (5)

(b) What is dynamic linking? Write down some advantages of dynamic loading. (5)

VI. (a) Explain the concept of recursive macro expansion with an example. (5)

(b) With a brief example write down how macro processors allow parameters to be concatenated with other character strings. (5)

**OR**

VII. Explain macro processor design algorithm with data structures. (10)

VIII. Explain: (10)

(i) Network operating system.

(ii) Distributed operating system.

(iii) Object oriented operating system.

**OR**

IX. (a) Write a short note on virtual machine with diagram. (5)

(b) Briefly explain the various functions of an operating system. (5)

***