

Roll No.

Total No. of Pages: 02  
Total No. of Questions: 09

**B. Tech. (CSE, IT) (Sem.-4<sup>th</sup>)**  
**SYSTEM PROGRAMMING**  
Subject Code: BTCS-405  
Paper ID: [A1187]

Time: 3 Hrs.

Max. Marks: 60

**INSTRUCTIONS TO CANDIDATE:**

1. Section-A is compulsory.
2. Attempt any four questions from section-B
3. Attempt any two questions from section-C

**SECTION-A**

10x2=20

**Q.1.**

- (a) Differentiate between system software and operating system.
- (b) The following program is supposed to multiply 3 times 2 and store the result into location 1000 will it?

L	3, = F' 2'
M	3, = F'3'
ST	3, 1000
- (c) List two advantages of binding at load time over binding at assembly time.
- (d) List two disadvantages of binding at execution time over binding at load time.
- (e) What is the purpose of ID number on ESD card? Why is it no required for locally defined symbols?
- (f) At what point of time Linkage editor performs binding.
- (g) What is the purpose of LEX and YACC in Linux?
- (h) What is the significance of AIF and AGO.
- (i) Give the four functions that a loader must perform.
- (j) Differentiate between a pass and a phase.

**SECTION-B**

4x5=20

**Q.2.** In a sense the macro expansion is very similar to subroutine calls during program execution. Explain the similarities and the differences between them.

**Q.3.** What are the functions that an editor is supposed to perform? Compare the various types of editors e.g. line editor, full screen editor and multi-window editor.

- Q.4.** Describe the various debugging techniques.
- Q.5.** What do you mean by code optimization. Elaborate by taking a suitable example.
- Q.6.** Describe the various phases of a compiler with example.

### SECTION-C

**2x10=20**

- Q.7.** In case of a two pass direct linking loaders describe the functions of pass1 and pass 2  
Suppose you were restricted to a one pass loader only what facilities would you be able to give to the user. For example: Simple address relocation, external symbol etc. Justify your answer and describe the restrictions that are applicable.
- Q.8.** Discuss the design of a two pass macro Processor. Also specify the various database needed to implement a two pass macro processor.
- Q.9.** For the following program
- (i) Show the symbol Table at the end of pass1. (3)
- (ii) Show the changes in the base register table during pass 2. (3)
- (iii) Show the generated machine code from pass2. (4)

```
SIMPLE  START
        BALR  15,0
        USING *,15
LOOP    L     R1,TWO
        A     R1,TWO
        ST   R1,FOUR
        CLI  FOUR+3,4
        BNE  LOOP
R1      EQU  1
TWO     DC   F '2'
FOUR    DS   F
        END
```

(Here CLI is compare Logical belongs to SS Group and BNE stands for branch on A not equal to B)

.....END.....