Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – SUMMER 2021

Subject Code:2150708   **Date:04/09/2021**
Subject Name:System Programming
Time:10:30 AM TO 01:00 PM   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	What are the advanced assembler directives? Explain any two with examples.	**03**
	(b)	Explain memory allocation in block structured language.	**04**
	(c)	Define Macro and explain Marco expansion algorithm.	**07**
Q.2	**(a)**	Differentiate between passes and phases of complier.	**03**
	(b)	Write a short note on bootstrap loader.	**04**
	(c)	Explain life cycle of a source program. Also explain different views on the meaning of a program.	**07**

OR

(c) Given the source program: **07**

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, ='13'
        MOVEM   AREG, D
D       EQU     A+1
L2      PRINT   D
        STOP
B       DC      '19'
        END
```

(i) Show the contents of the symbol table, literal table & pool table.
(ii) Show the intermediate code generated for the program.

Q.3	**(a)**	Explain compiler-compiler and cross-compiler.	**03**
	(b)	Explain positional parameter and keyword parameter with example.	**04**
	(c)	Explain design of linker in brief.	**07**

OR

Q.3	**(a)**	Explain REPT and IRP Statement.	**03**
	(b)	Explain Macro prototype & model statement with the help of example.	**04**
	(c)	List various phases of language processor. Explain any one phase in detail.	**07**
Q.4	**(a)**	Draw an FA accepting regular expression {a, b}*{a}.	**03**
	(b)	Define forward reference. How it can be solved using back-patching?	**04**
	(c)	What is program relocation? How relocation is performed by linker? Explain with example.	**07**

OR

Q.4	**(a)**	Compare various intermediate code forms for an assembler.	**03**
	(b)	Define linking. How external reference is resolved in linking?	**04**
	(c)	List and explain advance macro facility with suitable example.	**07**
Q.5	**(a)**	Explain the term loader with its basic function.	**03**
	(b)	Define and explain in brief: i) MNT ii) APT iii) PDT iv) MDT.	**04**

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(c) Given the Grammar, evaluate the string id-id*id using shift reduce parser. **07**

$E \rightarrow E - T$
$E \rightarrow T$
$T \rightarrow T * F$
$T \rightarrow F$
$F \rightarrow id$

OR

Q.5 (a) What is pure and impure interpreter? **03**

(b) Eliminate left recursion from the following grammar: **04**

$S \rightarrow AB$
$A \rightarrow CB \mid b$
$C \rightarrow Sa$
$B \rightarrow b$

(c) What is memory binding? Explain dynamic memory allocation using extended stack model. **07**

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