Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2022

Subject Code:3160715 Date:10/06/2022

Subject Name:System Software

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)**	Define system software. Give difference between system software and application software.	**03**
	(b)	Explain the user-centric view and system-centric view of system software.	**04**
	(c)	Explain lexical, syntax and semantic analysis with example.	**07**
Q.2	**(a)**	Explain the following. 1. ORIGIN 2. EQU 3. LTORG	**03**
	(b)	Show the difference between positional parameter and keyword parameter in macro.	**04**
	(c)	Compare variant I and variant II of intermediate code.	**07**
		OR	
	(c)	Given the source program:	**07**

```
          START   200
          MOVER   AREG, ='5'
          MOVEM   AREG, M
L1        MOVER   AREG, ='2'
          ORIGIN  L1+3
          LTORG
NEXT      ADD     AREG, ='1'
          SUB     BREG, ='2'
          BC      LT, BACK
          LTORG
BACK      EQU L1
          ORIGIN  NEXT+5
          MULT    CREG, ='4'
          STOP
X         DS      1
          END
```

1. Show the content of symbol table generated at the end of pass I.
2. Show the intermediate code generated for the program.

Q.3	**(a)**	Compare and contrast the properties of macros and subroutines with respect to following criterion. 1. Code space requirement 2. Execution speed 3. Processing requirement by assembler 4. Flexibility	**03**
	(b)	What is program relocation? How it is performed?	**04**
	(c)	List and explain all the tables used in macro preprocessor.	**07**
		OR	
Q.3	**(a)**	Demonstrate the use of AIF and AGO.	**03**
	(b)	Explain in brief about self relocating program.	**04**
	(c)	List and explain all the task involved in macro expansion.	**07**
Q.4	**(a)**	Explain compile-and-go loaders in brief.	**03**
	(b)	What is debugger? Explain different types of error in program.	**04**
	(c)	What is overlay? Explain the linking of overlay structured program performed.	**07**
		OR	
Q.4	**(a)**	Differentiate between linker and loader.	**03**
	(b)	Differentiate pure and impure interpreter.	**04**
	(c)	Write and explain an algorithm for first pass of the Linker program.	**07**
Q.5	**(a)**	Explain Ambiguous Grammar.	**03**
	(b)	Eliminate left recursion from the following grammar. $S \rightarrow Aa / b$ $A \rightarrow Ac / Sd / \in$	**04**
	(c)	What is optimizing transformation? discuss various optimizing transformations.	**07**
		OR	
Q.5	**(a)**	Define the following. 1. Finite state automaton 2. Regular expression 3. Operator grammar	**03**
	(b)	Explain in brief about causes of large semantic gap.	**04**
	(c)	Explain recursive descendent parsing algorithm.	**07**

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