

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

	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.

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

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