Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code: 3160715 Date: 30-05-2025

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 following: 1)Specification Gap 2)Language Processor 3)Language Migrator	**03**
	(b)	Differentiate Problem Oriented Languages and Procedure Oriented Languages.	**04**
	(c)	Describe System Software Development with appropriate diagram.	**07**
Q.2	**(a)**	Define Left Recursion. Remove Left Recursion from the following grammar: A → A x | A y | A B | c | d B → e	**03**
	(b)	Construct LL(1) Parsing table for the following grammar: S → aAC | Bb A → eD B → f | g C → h | i D → bE | ε E → eD | dD	**04**
	(c)	Explain advanced assembler directives with suitable example.	**07**
		OR	

	(c)	Consider following assembly language program:
		(i) Write equivalent machine code
		(ii) Write Intermediate code using Variant-I representation.
		START 200
		READ A
		READ B
		MOVER BREG, A
		MULT BREG, B
		MOVEM BREG, C
		STOP
		A DS 1
		B DS 1
		C DS 1
		END
			07

Q.3	**(a)**	Write a macro with parameters A, B, C and D. Calculate A * B + C * D in AREG.	**03**
	(b)	Explain nested macro call with example.	**04**

	(c)	Explain expansion time loops in macro.	**07**
		OR	
Q.3	**(a)**	Compare features of subroutine and macro.	**03**
	(b)	Explain positional parameter, keyword parameter and default value parameter.	**04**
	(c)	Explain expansion time statements AIF, AGO and ANOP.	**07**
Q.4	**(a)**	Compare loader and linker.	**03**
	(b)	Explain Bootstrap loader.	**04**
	(c)	What is Overlay? Explain the execution of an overlay structured program.	**07**
		OR	
Q.4	**(a)**	Explain Compile-and-Go loader.	**03**
	(b)	Consider an object module with three programs A, B and C, located at following addresses: Program Address A 200-250 B 302-370 C 480-533 The load address is 300 for the executable A, B and C to be generated. Find: i) Size of each Program ii) Load origin of each program iii) Relocation Factor for each Program	**04**
	(c)	Explain self-relocating program.	**07**
Q.5	**(a)**	Explain analysis phase of an assembler.	**03**
	(b)	Write quadruple representation for the following expression: Result = -w * x + -y * z	**04**
	(c)	Explain pure and impure interpreters.	**07**
		OR	
Q.5	**(a)**	Compare one pass assembler and two pass assemblers.	**03**
	(b)	Describe static binding and dynamic binding.	**04**
	(c)	Describe JVM with appropriate diagram.	**07**

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