Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI EXAMINATION – WINTER 2025

Subject Code:3160715 Date:25-11-2025

Subject Name:System Software

Time:02:30 PM TO 05:00 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 the following terms: i) System Programming ii) Logical Address Space iii) Device Driver	**03**
	(b)	Discuss the various recent trends in software development.	**04**
	(c)	Explain the role of symbol table data structure in language processor and also, discuss how one can organize the symbol table using linear data structure?	**07**
Q.2	**(a)**	Discuss various desirable properties of an intermediate representation (IR) of a code in language processor.	**03**
	(b)	Explain the following assembler directives: i) END ii) ORIGIN	**04**
	(c)	An assembly program contains the statement A EQU B+10 Indicate how the EQU statement can be processed if i) B is a back reference ii) B is a forward reference	**07**
		OR	
	(c)	Discuss in detail the various data structures involved in PASS-I of the assembler.	**07**
Q.3	**(a)**	What do you mean by lexical and semantic macro expansion?	**03**
	(b)	Explain nested macro call with example.	**04**
	(c)	Compare and contrast the properties of macros and subroutines with respect to the following: i) code space requirements ii) execution speed iii) processing required by the assembler	**07**
		OR	
Q.3	**(a)**	Draw the schematic design of a macro preprocessor.	**03**
	(b)	Explain the use of REPT and IRP statement in macros.	**04**

	(c)	Explain the various attributes of the following tables involved in macro preprocessor. i) MNT ii) KPDTAB iii) SSTAB iv) EVTAB	**07**
Q.4	**(a)**	What do you mean by non relocatable program?	**03**
	(b)	Explain absolute loader with suitable example.	**04**
	(c)	Discuss in detail how linker resolves the external references.	**07**
		OR	
Q.4	**(a)**	Define the following terms. i) Overlay program ii) Relocating loader iii) Program relocation	**03**
	(b)	A self-relocating program needs to find its load address before it can execute its relocating logic. Comment on how this information can be determined by the program.	**04**
	(c)	Explain various components of an object module.	**07**
Q.5	**(a)**	Describe the ambiguity in grammar specification.	**03**
	(b)	Explain the difference between pure and impure interpreter.	**04**
	(c)	Demonstrate the use of triples and quadruples representation used in compiler with suitable example.	**07**
		OR	
Q.5	**(a)**	Explain the role of LEX and YACC utility.	**03**
	(b)	Discuss the top down parsing without backtracking with example.	**04**
	(c)	Discuss various optimizing transformation techniques commonly used in compilers.	**07**

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