P P SAVANI UNIVERSITY

Seventh Semester of B. Tech. Examination

December 2022

SECE4013 System Software

17.11.2022, Thursday **Time: 10:00 a.m. To 12:30 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

			CO	BTL
Q - 1	Answer the Following: (Any Five)	**[05]**		
(i)	Operating system and utility software are examples of		**1**	**1**
	a) System software c) Device drivers			
	b) Application software d) Customized software			
(ii)	What is the need of MAR register?		**1**	**1**
(iii)	The load module is the output of _____.		**1**	**1**
	a) Loader c) Linker			
	b) Assembler d) All of above			
(iv)	Define specification gap.		**1**	**1**
(v)	What is meant by forward reference?		**1**	**1**
(vi)	Define macro expansion.		**3**	**1**
(vii)	In two pass assembler, the object code generation is done during _____.		**3**	**2**
	a) First pass c) Third pass			
	b) Second pass d) Not done by assembler			
Q - 2 (a)	Explain the various stages of the life cycle of a source program with a neat diagram.	**[05]**	**1**	**2**
Q - 2 (b)	Explain language processing activities.	**[05]**	**1**	**3**
	OR			
Q - 2 (a)	Enlist various phases of a language processor. Explain roles of phases of language processor.	**[05]**	**1**	**1, 2**
Q - 2 (b)	Write a short note on levels of system software.	**[05]**	**1**	**2**
Q - 3 (a)	Enlist various advanced assembler directives. Explain any two with suitable example.	**[05]**	**3**	**1, 2**
Q - 3 (b)	Compare single pass assemble and two pass assembler. Explain two pass assembler in detail.	**[05]**	**3**	**2, 3**
	OR			
Q - 3 (a)	Describe following data structures: OPTAB and SYMTAB	**[05]**	**3**	**2**
Q - 3 (b)	Explain analysis and synthesis phases of an assembler with their tasks.	**[05]**	**3**	**3**
Q - 4	Attempt any one.	**[05]**		
(i)	What is macro preprocessor? Explain steps of macro preprocessor design.		**3**	**1, 2**
(ii)	What is macro in programming language? Write an algorithm for macro definition.		**3**	**1, 6**

SECTION – II

Q - 1	Answer the Following: (Any Five)	**[05]**		

(i)	What is translated origin?		**2**	**1**
(ii)	Give an example of relocating loader.		**2**	**2**
(iii)	For creating a binary program linker makes use of a memory area which is called as _____.		**2**	**1**
	a) memory map	c) code area		
	b) work area	d) segment		
(iv)	What is handle?		**2**	**1**
(v)	During compilation, the process of scanning is also known as _____.		**2**	**2**
	a) interpretation	c) syntax analysis		
	b) lexical analysis	d) none of these		
(vi)	Select the machine dependent phase of the compiler.		**2**	**2**
	a) Code optimization	c) Both a and b		
	b) Code generation	d) None of the above		
(vii)	JVM is _____.		**4**	**2**
	a) Interpreter	c) Compiler		
	b) Assembler	d) Debugger		
Q - 2 (a)	Explain how relocation and linking is performed.		**[05]** **2**	**2**
Q - 2 (b)	Explain absolute loader with example.		**[05]** **2**	**2**
	OR			
Q - 2 (a)	What is overlay? Explain the execution of an overlay structured program.		**[05]** **2**	**1, 2**
Q - 2 (b)	What is program relocation? How relocation is performed by linker?		**[05]** **2**	**1, 2**
Q - 3 (a)	Explain left recursion and left factoring with example.		**[05]** **4**	**2**
Q - 3 (b)	List and explain various types of grammars.		**[05]** **2**	**1, 2**
	OR			
Q - 3 (a)	Consider following grammar: S □ aSbS | bSaS | ε Derive the string abab. Draw corresponding parse tree. Is this grammar ambiguous? Justify.		**[05]** **4**	**5, 6**
Q - 3 (b)	Define the term parsing. Compare top-down and bottom-up parsers.		**[05]** **2**	**1, 3**
Q - 4	Attempt any one/two.		**[05]**	
(i)	What is code optimization? Enlist various optimizing transformations of a compiler. Explain any one with example.		**4**	**2, 3**
(ii)	What is interpreter? Explain benefits of interpreter. Compare interpreter and compiler.		**4**	**2, 3**

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create