Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016

Subject Code:2150708 Date:22/11/2016

Subject Name:System Programming

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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	A _____ is a language processor which bridges an execution gap but is not a language translator	
	2	Justify (True/False): A language migrator provides portability of program.	
	3	Difference between Procedure oriented language and Problem oriented language.	
	4	Describe the output of Lexical analysis.	
	5	Difference between Literal and Constant.	
	6	Describe the syntax of keyword parameter and the use of it.	
	7	What is the use of backpatching?	
	8	Which of system software always reside in main memory? What kind of input this system software takes?	
	9	Define Handle, Grammar	
	10	How to avoid backtracking in top down parsing?	
	11	Justify (True/False): A positional parameter can have a default value.	
	12	Give name of data structures used in compiler	
	13	What is the use of POOLTAB in assembler?	
	14	What is JIT?	
Q.2	**(a)**	What are the basic tasks that must be performed by macro preprocessor?	**03**
	(b)	List out different forms of editor and explain each of them.	**04**
	(c)	Explain Left recursion, Left factoring and backtracking in top down parsing.	**07**
		OR	
	(c)	Develop an LL(1) parser table for the following grammer and Parse the string using the parsing table : (id*id) + (id*id) E->TA A->+TA| € T->VB B->*VB|€ V->id|(E)	**07**
Q.3	**(a)**	Explain Absolute loader.	**03**
	(b)	Develop regular expression and DFAs for the following kind of strings: 1. a real number with optional integer and fraction part 2. a comment string in the C++ language.	**04**
	(c)	Write operator precedence table for arithmetic operators "+", "*", "-", "/" "(", ")". Parse following expression using the table. *id * (id + id)/ (id *id)*	**07**
		OR	
Q.3	**(a)**	How compiler implements scope rules?	**03**
	(b)	An assembly program contains the statement X EQU Y + 25 Indicate how the EQU statement can processed if (1) Y is a back reference (2) Y is a forward reference	**04**

(c) Write the data structure, intermediate code of following assembly program. Write the assembly program output if value of N = 5. **07**

```
          START   101
          READ    N
          MOVER   BREG, ONE
          MOVEM   BREG, TERM
AGAIN     MULT    BREG, TERM
          MOVER   CREG, TERM
          ADD     CREG, ONE
          MOVEM   CREG, TERM
          COMP    CREG, N
          BC      LE, AGAIN
          MOVEM   BREG, RESULT
          PRINT   RESULT
          STOP
N         DS      1
RESULT    DS      1
ONE       DC      '1'
TERM      DS      1
          END
```

Q.4 **(a)** Explain attributes of formal parameters in macro with syntax. **03**

(b) Explain Object Module of a Program Unit P in Linker. **04**

(c) Describe the use of stacks in Expansion of Nested macro calls with example. **07**

OR

Q.4 **(a)** Explain Boostrap loader. **03**

(b) What is Overlay? Explain the execution of an overlay structured program. **04**

(c) Explain in detail how the following input gets processed in toy compiler. **07**

```
int a;
real b,c;
c= a + b * 0.6;
```

Q.5 **(a)** Describe the level of System Software. **03**

(b) Describe the use of REPT and IRP statement. **04**

(c) Explain types of intermediate code representation of expression during compilation in detail. **07**

OR

Q.5 **(a)** What is pure and impure interpreter? **03**

(b) Explain design of an editor. **04**

(c) What is the use of static pointer and dynamic pointer in compiler? Explain working of Display with suitable example. **07**

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