Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER–III • EXAMINATION • WINTER 2017

Subject Code: 2630005   **Date: 04-01-2018**

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.

Q.1	**(A)**	Define following terms	**07**
		(1) Language translator	
		(2) Forward reference	
		(3) Parsing	
		(4) Stack	
		(5) Assembler	
		(6) Linker	
		(7) Loader	

(B) Answer the following questions.   **07**
  (1) Which assembly statement reserves areas of memory and associates names with them?
  (2) Which statement is used to test the condition in an assembly program?
  (3) Define : Macro
  (4) Define : Control structure
  (5) What is binary program?
  (6) List language processing activities
  (7) Which data structure is a nonlinear data structure that permits the allocation and deallocation of entities in random order?

Q.2 (A) Explain toy compiler with front end and back end by using following C declaration statements.   **07**
  int i;
  float a, b;
  a = b + i;

(B) List and explain assembly language statement categories.   **07**

<div align="center">OR</div>

(B) Write the algorithm for Pass I of assembler   **07**

Q.3 (A) Build the DFA using table to recognize identifier, unsigned integer and unsigned real numbers with fraction.   **07**

(B) Define assembly directives and explain ORIGIN, EQU and LTORG assembly directives with example.   **07**

<div align="center">OR</div>

Q.3 (A) Parse a + b * c where a, b and c are identifiers using top down parsing without backtracking for the following grammar.   **07**
  E ::= T E"
  E" :: = + E | ε
  T :: = V T"
  T" ::= T | ε
  V ::= <id>

	(B)	Explain memory allocation and access of local and nonlocal variables in block structured programming languages.	**07**
Q.4	**(A)**	Explain different types of parameters during macro expansion.	**07**
	(B)	Explain various data structures of macro preprocessor.	**07**

OR

Q.4	**(A)**	Write an algorithm for macro expansion.	**07**
	(B)	Explain compilation of expression using triple table.	**07**

OR

Q.5	**(A)**	Explain schematic of program execution. Explain translated, linked and load time addresses.	**07**
	(B)	Define Grammar and explain derivation and reduction with suitable example.	**07**

OR

Q.5	**(A)**	Explain the content of object module.	**07**
	(B)	Define software tools and explain various editors in detail	**07**

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