

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**
- OR
- (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**
- OR
- 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**
- 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**
