

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER-III • EXAMINATION – WINTER • 2015

Subject Code: 630005

Date: 02-01-2016

Subject Name: System Software

Time: 10.30 am – 01.30 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)** Explain the following terms in brief. **14**
1. Translator
 2. System software
 3. Operand descriptor
 4. Absolute Loader
 5. Relocation factor
 6. Overlay
 7. Linked Origin
 8. Translated Origin
 9. Production and Reduction
 10. Extern and Entry Statements
 11. LCL and SET statements
 12. Address Sensitive Instructions
 13. Semantic Gap
 14. Specification Gap
- Q.2 (a)** Do as directed. **03**
1. Calculate number of bytes required for all following variable declarations in assembly language. **02**
 - (i) P DB 6 DUP (2)
 - (ii) Q DD ?
 - (iii) R DQ 4
 2. Write pros and cons of Machine and Assembly level languages. **02**
 3. Explain the importance of LINKTAB and RELOCTAB of object module. **02**
- (b)** Write and explain an algorithm of 2-pass assembler. **07**
- OR**
- (b)** Write and explain relocation algorithm implemented by linker. **07**
- Q.3 (a)** 1. Explain shift-reduce parsing algorithm. **05**
2. Write the difference between interpreter and compiler. **02**
- (b)** Write a short note on Optimizing Transformation perform by the compiler. **07**
- OR**
- Q.3 (a)** 1. Given a postfix string $| - a b c * + d e f ^ * + - |$ generate triples, indirect triples and quadruples. Explain the significance of these forms. **04**
2. Explain different types of statements in assembly language. **03**
- (b)** Implement Operator Precedence Parsing for the given string $| - a + b * c - |$. **07**
Prepare OPM and show the status of stack and AST during the reduction.

- Q.4 (a)** 1. Explain nested macro expansion using extended stack model. **04**
2. Explain static and dynamic memory allocation in block structured languages. **03**
- (b)** Explain the role of value number for local optimization phase of compiler. **07**
- OR**
- Q.4 (a)** Explain the usage of static and dynamic pointers to access local and non local variables in block structured languages. **07**
- (b)** 1. Explain (a) Non relocatable programs (b) Relocatable programs (c) Self relocatable programs. **03**
2. Explain different types of parameter passing mechanism in Macro Preprocessor. **04**
- Q.5 (a)** Derive a DFA to recognize a valid integer value. **07**
- (b)** 1. Explain THEADR and FIXUPP records of Intel 8088 object module. **02**
2. Explain the algorithm of binary search organization. **05**
- OR**
- Q.5 (a)** 1. Explain different kind of Text editors. **04**
2. Explain the usage of SSNTAB and SSTAB of the macro preprocessor. **03**
- (b)** 1. Explain various types of device drivers in brief. **04**
2. Explain the usage of REPT and IRP statements of Macro Preprocessor. **03**
