S-789 Roll No. ……..

MCA–15/M.Sc. (IT)-15

System Software

Master of Computer Applications/
Master of Science in Information Technology
(MCA/M. Sc. IT-11/12/16/17)
Fourth Semester, Examination, 2018

Time : 3 Hours **Max. Marks : 80**

Note : This paper is of **eighty (80)** marks containing **three (03)** Sections A, B, C. Attempt the questions contained in these Sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section 'A' contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.

1. Why compilers use intermediate representation ? What does intermediate code look like ? How is it different form final translated code ? Explain.
2. Describe the instruction format and addressing modes of the SIC/XE system in detail. Also explain various arithmetic operations available in SIC/XE system with examples.
3. What is loader ? List types of loader. Explain each loader in brief.

4. What is assembly language ? Explain the *three* basics facilities of assembly language. Explain *one* pass macro processor algorithm.

Section–B

(Short Answer Type Questions)

Note : Section 'B' contains eight (08) short answer type questions of eight (08) marks each. Learners are required to answer *four* (04) questions only.

1. Which software is used to convert program written into one programming language into another programming language ? Why ? Explain.
2. Which phases of compiler are included in front end phase of a complier ? Which phases must be performed before semantic analysis phase of a complier ? Explain.
3. What do you mean by Mnemonic in assembly language ? What is an imperative statement in assembly language ? Explain.
4. What is specification gap ? State difference between machine language and high level language.
5. What is Language Processing ? Explain spectrum of language processor.
6. What is the purpose of LEX ? Explain YACC and its features.
7. Which are the four fundamental functions performed in editor ? Explain each in brief.
8. What is relocating loader ? Which information are stored in binary program of relocating loader ? Explain.

Section–C

(Objective Type Questions)

Note : Section 'C' contains ten (10) objective type questions of one (1) mark each. All the questions of this Section are compulsory.

1. Which of the following symbols table implementation is based on the property of locality of reference ?
   (a) Hash table
   (b) Search tree
   (c) Self-organizing list
   (d) Linear list

2. Three address code involves :
   (a) Exactly 3 address
   (b) At most 3 address
   (c) No unary operators
   (d) None of these

3. Recursive descent parsing is an example :
   (a) Top down parsing
   (b) Bottom up parsing
   (c) Predictive parsing
   (d) None of the above

4. Generation of intermediate code based on a abstract machine model is useful in compilers because :
   (a) It makes implementation of lexical analysis and syntax analysis easier.

(b) Syntax directed translation can be written for intermediate code generation.

(c) It enhances the portability of the front end of the compiler.

(d) It is not possible to generate code for real machines directly from high level language programs.

5. An intermediate code form is :

(a) Postfix notation

(b) Syntax tress

(c) Three address code

(d) All of the above

6. The translator is best described as :

(a) Application software

(b) A system software

(c) A hardware component

(d) All of the above

7. Which of the following is the most powerful parser ?

(a) SLR

(b) LALR

(c) Canonical LR

(d) Operator precedence

8. Relocating bits used by relocating loader are specified by :

(a) Relocating loader itself

(b) Linker

(c) Assembler

(d) Macro processor

9. Synthesized attribute can be easily simulated by a :

(a) LL grammar

(b) Ambiguous grammar

(c) LR grammar

(d) None of the above

10. A bottom up parser generates :

(a) Rightmost derivation

(b) Rightmost derivation in reverse

(c) Leftmost derivation

(d) Leftmost derivation in reverse