

## BCA–20

### System Programming

Bachelor of Computer Applications

(BCA–11/16/17)

Sixth Semester, Examination, 2017

**Time : 3 Hours**

**Max. Marks : 80**

**Note :** This paper is of **eighty (80)** marks containing **three (03)** Sections A, B and C. Learners are required to 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. Write complete grammar for an arithmetic expression containing operators ‘+’, ‘-’, ‘\*’, ‘\$’ using recursive specification and Backus Naur Form (BNF), where ‘\$’ is an exponentiation operator.
2. What is meant by optimizing transformations ? Explain any *three* with suitable example.
3. Given following expression,  $x = - a * b + - a * b :$ 
  - (i) Write three address code for the expression.

- (ii) Optimize the three address code if it is possible to do so.
  - (iii) Give triple implementation for the three address code of the expression.
4. Explain the use of various data structures (tables) needed in PASS I of the assembler. Also give details of their fields. Explain various suitable data structures for the symbol table.

### 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. Explain the working of LL (1) parser. Parse the following string :  $id + id - (id * id)$ .
2. Differentiate between Lexical and Semantic Expansion.
3. Explain the methods for accessing non-local variables.
4. Explain recursive decent parser with suitable example. Also state its drawbacks.
5. What is Overlay ? Explain the execution of an overlay structured program.
6. Compare Problem Oriented and Procedure Oriented languages.
7. What are the issues in code generation in relation to compilation of expression ? Explain each issue in brief.
8. Explain Symbol table and Mnemonics table with suitable example.

**Section-C****(Objective Type Questions)**

**Note :** Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this Section are compulsory.

1. Translator for low level programming language were termed as :
  - (a) Assembler
  - (b) Compiler
  - (c) Linker
  - (d) Loader
  
2. Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as :
  - (a) Semantic analysis
  - (b) Syntax analysis
  - (c) Regular analysis
  - (d) General analysis
  
3. Load address for the first word of the program is called :
  - (a) Linker address origin
  - (b) Load address origin
  - (c) Phase library
  - (d) Absolute library
  
4. Symbolic names can be associated with :
  - (a) Information

- (b) data or instruction
  - (c) Operand
  - (d) mnemonic operation
5. An assembler is :
- (a) Programming language dependent
  - (b) Syntax dependent
  - (c) Machine dependent
  - (d) Data dependent
6. The expansion of nested macro calls follows :
- (a) FIFO rule
  - (b) LIFO rule
  - (c) LILO rule
  - (d) Priority rule
7. Assembler is a machine dependent, because of :
- (a) Argument list array (ALA)
  - (b) Macro definition table (MDT)
  - (c) Pseudo operation table (POT)
  - (d) Mnemonics operation table (MOT)
8. Compiler can check :
- (a) Syntax Error
  - (b) Logical Error
  - (c) Both Logical and Syntax Error
  - (d) None of these

9. In an absolute loading scheme, which loader function is accomplished by programmer ?
- (a) Linking
  - (b) Allocation
  - (c) Both (a) and (b)
  - (d) Reallocation
10. Resolution of externally defined symbols is performed by :
- (a) Linker
  - (b) Loader
  - (c) Compiler
  - (d) Interpreter

