

Total No. of printed pages = 4

BCA 171503

Roll No. of candidate

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BINA CHOWDHURY CENTRAL LIBRARY
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*6/3/*2021

B.C.A. 5th Semester End-Term Examination

SYSTEM SOFTWARE

(New Regulation)

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *four* from the rest.

1. Choose the correct answer: (10 × 1 = 10)
- (i) Assembler is used as a translator for
 - (a) high level programming language
 - (b) low level programming language
 - (c) intermediate level programming language
 - (d) object oriented programming language
 - (ii) Program relocation is the process of
 - (a) showing the addresses to the user
 - (b) updating the addresses used in the address sensitive instructions of a program.
 - (c) deleting the addresses of the process.
 - (d) none of the above
 - (iii) The following generates the parse tree
 - (a) Syntax analysis phase
 - (b) Semantic analysis phase
 - (c) Error handler
 - (d) Code generator

[Turn over

- (iv) In a two-pass assembler, the task of the Pass I is
- delete the source code
 - synthesize the target program.
 - analyze the source code.
 - none of the above
- (v) A compiler should report the presence of which of the following in the source code,
- Class
 - Object
 - Error
 - Text
- (vi) Instructions like MOVEM, ADD are called,
- Operator
 - Operands
 - Symbols
 - Opcodes
- (vii) An assembler stores the Symbols in?
- Symbol table
 - Special purpose register
 - General purpose register
 - Status flag
- (viii) If we left factor the productions $A \rightarrow \alpha\beta_1 | \alpha\beta_2$ which of the following productions we will get?
- $A \rightarrow \alpha A' | \epsilon, A' \rightarrow \beta_1 | \beta_2$
 - $A \rightarrow \alpha A', A' \rightarrow \beta_1 | \beta_2$
 - $A \rightarrow \alpha A', A' \rightarrow \beta_1 | \beta_2 | \epsilon$
 - $A \rightarrow A' \alpha, A' \rightarrow \epsilon$
- (ix) Consider a statement of C language,
- ```
int a = 4
```
- Which of the following is an identifier in the statement?
- int
  - =
  - a
  - 4
- (x) For which of the following condition a grammar is called LL(1)?
- There are multiply-defined entries in the parsing table of the grammar.
  - The grammar is ambiguous.
  - The grammar is left recursive.
  - The parsing table of the grammar has no multiply-defined entries.

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Answer any four questions from the following

2. (a) Mention different phases of a compiler.  
(b) What are the different kinds of assembly language statements?  
(c) What is the difference between a compiler and an interpreter?  
(d) How literals are different from constants in an assembly program?
3. (a) Find FIRST and FOLLOW of the grammar symbols of the following grammar, (8+4+3)  
 $E \rightarrow TE'$   
 $E' \rightarrow +TE' | \epsilon$   
 $T \rightarrow FT'$   
 $T' \rightarrow *FT' | \epsilon$   
 $F \rightarrow (E)id$
- Where the symbol  $\epsilon$  means epsilon.
- (b) Identify the tokens in the following C code:  
If  $(a > b)\{a = b + 1;\}$
- (c) What do you mean by lexeme and pattern?
4. (a) What is the role of linker and a loader? Explain. (5+4+3+3)  
(b) Give examples of different types of loaders.  
(c) What is the role of a preprocessor?  
(d) What is dynamic linking?
5. (a) What is a forward reference problem? How it can be solved? (5+7+3)  
(b) Explain the tasks performed by the Pass I and Pass II of a two pass assembler. What is the advantage of two pass assembler over single pass assembler?  
(c) What is the advantage of assembly language over machine language?
6. (a) What do you mean by top-down parsing and bottom-up parsing? (6+6+3)  
(b) What is recursive descent parsing? Consider the grammar as follows,  
 $X \rightarrow aMb, M \rightarrow cd|c$ .  
Show how the recursive descent parser will derive the string "acb" from the start symbol of the grammar.  
(c) What are different kinds of assembly language statements?

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7. (a) What is a macro? How it is differs from a function? (4+8+3)
- (b) Test whether the following grammar is LL(1) or not  
 $S \rightarrow A|B, A \rightarrow cA+b|a, B \rightarrow cB+a|b.$
- (c) What is a handle in parsing?
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