**Examinations Commencing from 1st June 2021**
Program: Computer Engineering
Curriculum Scheme: Rev2016
Examination: TE Semester VI
Course Code: CSC602 and Course Name: System Programming & Compiler Construction

Time: 2 hour                                                                    Max. Marks: 80

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| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
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| 1. | Which language processor bridges an execution gap but not translator? |
| Option A: | Pre-processor |
| Option B: | Assembler |
| Option C: | Compiler |
| Option D: | Loader |
| | |
| 2. | What are the fields present in MOT used in two pass assembler design? <br> 1. Mnemonic opcode <br> 2. Binary opcode <br> 3. Instruction length <br> 4. Instruction format |
| Option A: | 1 & 2 only |
| Option B: | 2 & 3 only |
| Option C: | 1,2,3 & 4 |
| Option D: | 3 & 4 only |
| | |
| 3. | Which of the following types of statements are present in assembly program? |
| Option A: | Imperative statements and assembler directives |
| Option B: | imperative and declarative statement |
| Option C: | imperative and declarative statement as well as assembler directive |
| Option D: | declarative statements and assembler directive |
| | |
| 4. | In a two-pass assembler, which of the following process is/are done under first pass? <br> 1. Adding literals to literal table <br> 2. Address resolution of local symbol |
| Option A: | 1 only |
| Option B: | 2 only |
| Option C: | 1 & 2 both |
| Option D: | Neither 1 nor 2 |
| | |
| 5. | Consider following code. What will be the entry come under MNT ? <br> The current values for MDTC and MNTC are MDTC=1 and MNTC=1 <br><br> **MACRO** <br> **INCR4   &AR1, &AR2, &AR3** <br>    **A   1, &AR1** |

|  |  |
|---|---|
|  | **A     2, &AR2**<br>**A     3, &AR3**<br>**MEND** |
| Option A: | Index-4, Macro name- INCR4, MDT index- 1 |
| Option B: | Index-1, Macro name- MACRO, MDT index- 1 |
| Option C: | Index-1, Macro name- INCR4, MDT index- 1 |
| Option D: | Index-4, Macro name- MACRO, MDT index- 4 |
|  |  |
| 6. | What is the process of replacing macro name by the statements and instructions included in macro definition is called? |
| Option A: | Expanding Macro |
| Option B: | Inserting a Macro |
| Option C: | Initializing a Macro |
| Option D: | Installing a Macro |
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| 7. | Which of the following is not a data structure used during Macro Processor design? |
| Option A: | Symbol table |
| Option B: | MNT |
| Option C: | MDT |
| Option D: | ALA |
|  |  |
| 8. | In case of Direct Linking Loader, which are the fields are present in Relocation and Linkage Directory (RLD) card? |
| Option A: | source card reference number, ESD ID, Length, Flag, Relative Address |
| Option B: | source card reference number, ESD ID, Flag |
| Option C: | source card reference number, ESD ID, Relative Address |
| Option D: | source card reference number, Relative Address, Length |
|  |  |
| 9. | In case of absolute loading scheme, which function is performed by loader? |
| Option A: | Loading and Allocation |
| Option B: | Loading |
| Option C: | Relocation |
| Option D: | Allocation |
|  |  |
| 10. | In which of the following scheme the loading and linking of external references is done at execution time? |
| Option A: | Absolute Loading |
| Option B: | Dynamic Linking |
| Option C: | General Loading |
| Option D: | Compile and go loading |
|  |  |
| 11. | Consider following Expression.<br>**- (p \* q) + (r + s) – (p + q + r + s)**<br>How many numbers of temporary variables are required to construct 3 address code? |
| Option A: | 8 |
| Option B: | 7 |
| Option C: | 9 |
| Option D: | 6 |

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| 12. | In which Code Optimization technique, variables are replaced with constants that have been assigned to them? |
| Option A: | loop optimization |
| Option B: | constant folding |
| Option C: | local optimization |
| Option D: | Constant propagation |
| | |
| 13. | Which technique is applicable to optimize the given code?<br>a=10;<br>for (j=0 ; j< a*2; j++)<br>{   x= j+2; } |
| Option A: | Code Motion |
| Option B: | Copy Propagation |
| Option C: | Induction Variable Reduction |
| Option D: | Common Sub-expression Elimination |
| | |
| 14. | Which of the following cannot be used as intermediate code form? |
| Option A: | Post fix notification |
| Option B: | Three address code |
| Option C: | Abstract Syntax tree |
| Option D: | Token |
| | |
| 15. | What of the following graph represents flow of control among the set of basic blocks? |
| Option A: | Hamiltonian graph |
| Option B: | Control graph |
| Option C: | Flow graph |
| Option D: | DAG |
| | |
| 16. | What will be the **FOLLOW(A)** for following grammar?<br>S➔AaAb<br>S➔BaBb<br>A➔ε<br>B➔ε |
| Option A: | Only a |
| Option B: | a, b |
| Option C: | Only b |
| Option D: | Only ε |
| | |
| 17. | Which of the following grammar is appropriate for operator precedence grammar? |
| Option A: | S-> EF |
| Option B: | S-> E*F \| ε |
| Option C: | S-> E+F |
| Option D: | S-> +EF |
| | |
| 18. | Which of the following statement are correct for Syntax Directed Definition?<br>    i. The terminals do not have inherited attributes.<br>    ii.  The non-terminal can have both inherited and synthesized attributes. |

| | iii. Each grammar symbol is associated with a set of attributes. |
|---|---|
| Option A: | i only |
| Option B: | i, ii and iii |
| Option C: | ii and iii |
| Option D: | iii only |
| | |
| 19. | Which of the following approach is used to evaluate the attributes in L-attributed SDTs? |
| Option A: | DFS with left-to-right Parsing |
| Option B: | BFS with left-to-right Parsing |
| Option C: | DFS with right-to-left Parsing |
| Option D: | BFS with right-to-left Parsing |
| | |
| 20. | Which sentence/s is correct with respesct to lexical analyzer?<br>    1. Recognizing the tokens<br>    2. To organize the variables in a lexical order<br>    3. Building a literal and identifier table |
| Option A: | 1 only |
| Option B: | 2 & 3 only |
| Option C: | 1, 2 & 3 |
| Option D: | 1 & 3 only |
| | |

| Q2. | Solve any Two 10 marks each |
|---|---|
| A | Generate SLR parsing table for the following grammar.<br>S→DD<br>D→dD \|e |
| B | Explain databases used in Single pass assembler design with suitable example. |
| C | What is Macro call, Macro expansion, Macro definition? How is macro different from subroutine? |
| Q3. | |
| A | **Solve any Two 5 marks each** |
| i. | Explain the process of elimination of left recursion with example. |
| ii. | Compare application software and system software. |
| iii. | Generate Three address code.<br>For(i=0;i<10;i++)<br>{<br>If (i<5)<br>a=b+c*3;<br>else<br>x=y+z;<br>} |
| B | **Solve any One                    10 marks each** |
| i. | What is fundamental process of a loader? Explain dynamic loading in detail. |
| ii. | Explain loop optimization techniques with example. |