# University of Mumbai
## Examination Summer 2022

Time: 2 hour 30 minutes Max. Marks: 80

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| Q1 (20 Marks) | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks** |
|---|---|
| 1. | Forward Reference Table (FRT) is arranged like |
| Option A: | Linked List |
| Option B: | Stack |
| Option C: | Queue |
| Option D: | Double Linked List |
| | |
| 2. | Compiler can check _____ error |
| Option A: | Logical |
| Option B: | Syntax |
| Option C: | Both A and B |
| Option D: | Content |
| | |
| 3. | Three address statement is abstract form of _____ |
| Option A: | Source program |
| Option B: | Target program |
| Option C: | Intermediate code |
| Option D: | Either A or C |
| | |
| 4. | _____is designed to solve a specific problem or to do a specific task. |
| Option A: | Application Software |
| Option B: | System Software |
| Option C: | Utility Software |
| Option D: | User |
| | |
| 5. | In a two-pass assembler, the task of the Pass II is to |
| Option A: | Separate the symbol, mnemonic opcode and operand fields |
| Option B: | Build the symbol table |
| Option C: | Construct intermediate code |
| Option D: | Synthesize the target program |
| | |
| 6. | We can optimize code by |
| Option A: | Common subprogram |
| Option B: | Loop declaration |
| Option C: | Dead code elimination |
| Option D: | Copy intermediate loop |
| | |
| 7. | A macro can be defined at |
| Option A: | Beginning of a program |
| Option B: | End of a program |
| Option C: | Anywhere in a program |
| Option D: | After initialization of program |
| | |
| 8. | Match all items in Group 1 with correct options from those given in Group 2. |

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| | Group1 | Group2 |
|---|---|---|
| | P. Regular expression<br>Q. Pushdown automata<br>R. Dataflow analysis<br>S. Register allocation | 1. Syntax analysis<br>2. Code generation<br>3. Lexical analysis<br>4. Code optimization |
| Option A: | P-4. Q-1, R-2, S-3 | |
| Option B: | P-3, Q-1, R-4, S-2 | |
| Option C: | P-3, Q-4, R-1, S-2 | |
| Option D: | P-2, Q-1, R-4, S-3 | |
| | | |
| 9. | Nested Macro calls are expanded using the | |
| Option A: | FIFO rule (First in first out) | |
| Option B: | LIFO (Last in First out) | |
| Option C: | FILO rule (First in last out) | |
| Option D: | None of the above | |
| | | |
| 10. | Which of the following can be accessed by the transfer vector while in linking? | |
| Option A: | External data segments | |
| Option B: | External sub-routines | |
| Option C: | Data located in other procedure | |
| Option D: | None of the mentioned | |

| **Q2 (20 Marks)** | **Solve any Four out of Six** **5 marks each** |
|---|---|
| A | Describe Conditional Macro expansion with suitable example |
| B | Explain the role of code optimization in compiler design |
| C | Differentiate between Application Program and System Program |
| D | Remove the left recursion from the grammar<br>$E \rightarrow E(T)\|T$<br>$T \rightarrow T(F)\|F$<br>$F \rightarrow id$ |
| E | Explain Forward Reference Problem and how it is handled in assembler design |
| F | Write note on Dynamic linking and Loading |

| **Q3 (20 Marks)** | |
|---|---|
| A | **Solve any Two** **5 marks each** |
| i | Explain Synthesized and inherited attributes |
| ii | What are the types of Assembly Language statements? Explain. |
| iii | Describe MNT, MDT and ALA with respect to macro processor with example |
| B | **Solve any One** **10 Marks** |
| i | Explain databases used in Two pass assembler design with suitable example |
| ii | Construct LL(1) Parsing table<br><br>S→ aBDh<br>B→ Cc |



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| | |
|---|---|
| | C→ bC \| Є<br>D→ EF<br>E→ g \| Є<br>F→ f \| Є<br><br>Check whether the string ‘acbgh’ is valid or not. |

| **Q4 (20 Marks)** | | |
|---|---|---|
| A | **Solve any Two** | **5 marks each** |
| i | Explain the different ways of parameter passing in macros. | |
| ii | Explain the role of Finite automata in compiler design | |
| iii | Explain different issues in code generation. | |
| B | **Solve any One** | **10 Marks** |
| i | Explain working of Direct Linking loader with example showing entries in different database built by DLL | |
| ii | What is the need of Intermediate Code Generation? Explain any 2 intermediate code generation forms with example | |

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