1212N954

Candidate's Seat No :_____

IMSc CS Sem.-7 Examination

System Software

December-2024

Time : 3-00 Hours] **[Max. Marks : 70**

Instructions:

- **Write both the Sections in the separate answer book.**
- **Both Sections have equal weightage.**
- **Draw Diagrams wherever necessary.**
- **Make Assumptions wherever necessary.**

SECTION – I

Q.1. Define the following: **[05]**

1. The designer expresses the ideas in terms related to the _____ of the software.
   A. Application Domain
   B. Execution Domain
   C. PL Domain
   D. Program Generator Domain
2. The gap between Application domain and PL domain is called _____.
3. Define execution gap.
4. A _____ is software which bridges a specification or execution gap.
5. Define: Forward reference.

Q.2. Answer the following: **[15]**

1. Define language processor. List and explain different kinds of language processor.
2. Define Editor. Explain five different types of editors.
3. Discuss with the help of a diagram the functions of front end of language processor for a toy compiler.

[OR]

Q.2. Answer the following: **[15]**

1. Discuss the use of procedure and problem oriented programming languages. Also list its advantages and disadvantages.
2. What is a user interface? Explain the structure of a user interface.
3. Explain in detail the back end phase of a toy compiler.

Q.3. Answer the following: **[15]**

1. Explain the following advanced assembler directives: EQU and LTORG with an example.
2. Explain positional parameters, keyword parameters and mixed-mode parameters in macro prototype with an example.
3. Write a summarized note on data structures/tables used in macro pre-processor with an example.

(P.T.O)

[OR]

Q.3. Answer the following: [15]

1. Explain with example data structures of assembler pass 1.
2. How forward references are handled using single-pass assembler?
3. Explain with an example how IRP and REPT statements in macro works?

SECTION – II

Q.4. Define the following: [05]

1. Non-relocatable programs
2. Non-terminal symbol
3. Linked origin
4. Production
5. Translation time address

Q.5. Answer the following: [15]

1. Explain operand descriptors and register descriptors.
2. Explain using diagram pure and impure interpreters.
3. Illustrate operator precedence parsing algorithm along with the Operator Precedence Matrix (OPM) for the input string: (a+b)*c.

[OR]

Q.5. Answer the following: [15]

1. List different code optimization techniques and explain any three of them with example.
2. Explain classification of grammars.
3. Generate DFA for recognizing identifiers, integers and real numbers along with state transition table.

Q.6. Answer the following: [15]

1. What is a device driver? Explain the design of a device driver.
2. Explain scheme for relocation in linker along with the algorithm.
3. Write a note on relocating and absolute loader.

[OR]

Q.6. Answer the following: [15]

1. Discuss various steps for execution of program written in a programming language with its schematic diagram.
2. Explain in detail character and block device drivers.
3. What is linking? Explain EXTRN and ENTRY statements with an example.