

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022**

**Subject Code:2150708****Date:20/06/2022****Subject Name:System Programming****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|--|-----------|
| <b>Q.1</b> | (a) What is the difference between System Software and Application software?                             | <b>03</b> |
|            | (b) Define following: Semantic gap, Execution gap, System Software, Handle                               | <b>04</b> |
|            | (c) Explain Life cycle of source program with neat sketch.   | <b>07</b> |
| <b>Q.2</b> | (a) Define Assembler. List out tasks performed during different phase of assembler.                      | <b>03</b> |
|            | (b) Difference between one pass and two pass assembler.  | <b>04</b> |
|            | (c) List out various assembler directives. Explain any three in detail.                                  | <b>07</b> |
| <b>OR</b>  |  |           |
|            | (c) Compare and contrast variant-I & II of the intermediate code for imperative statements in assembler. | <b>07</b> |
| <b>Q.3</b> | (a) Explain the term self-relocating program.  | <b>03</b> |
|            | (b) Explain positional parameter and keyword parameter with example.                                     | <b>04</b> |
|            | (c) Explain Design of Macro Preprocessor in detail.  | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.3</b> | (a) Explain Nested macro calls with suitable example.  | <b>03</b> |
|            | (b) Explain Macro prototype & model statement with the help of example.                                  | <b>04</b> |
|            | (c) What are the advanced macro programming facilitates? Explain with example.                           | <b>07</b> |
| <b>Q.4</b> | (a) Differentiate Linker and Loader.   | <b>03</b> |
|            | (b) Differentiate Top Down parser and Bottom Up parser.  | <b>04</b> |
|            | (c) What is overlay? Explain the execution of an overlay structured program.                             | <b>07</b> |
| <b>OR</b>  |  |           |
| <b>Q.4</b> | (a) What is Loader? Enlist basic functions of loader.  | <b>03</b> |
|            | (b) List and explain various types of grammar.   | <b>04</b> |
|            | (c) What is program relocation? How relocation is performed by linker? Explain with example.             | <b>07</b> |
| <b>Q.5</b> | (a) What is Code optimization? Explain any one Code optimization technique.                              | <b>03</b> |
|            | (b) Differentiate stack and heap allocation of memory.   | <b>04</b> |
|            | (c) Consider the grammar   | <b>07</b> |
|            | E → E-E  |           |
|            | E → E*E  |           |
|            | E → id   |           |
|            | Perform Shift-Reduce parsing of the input string “id1-id2*id3”   |           |

**OR**

- Q.5** (a) Differentiate Compiler and Interpreter. **03**  
(b) Draw the syntax tree and DAG for the input string: **04**  
 $x = -a*b + -a*b$   
(c) Explain triple, quadruple and indirect triples representation with **07**  
example.

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