PART – A

Answer all questions

1) With the help of a neat diagram, explain activation record.
2) Can a user access a non-local object in case of subroutines? Give valid reasons.
3) Draw short circuit evaluation for:
   \[
   \text{if}((A>B) \text{and}(C>D)) \text{ or}(E<>F) \text{ then} \\
   \text{then-clause.} \\
   \text{else} \\
   \text{else-cause.}
   \]
   Explain the advantages of short-circuit?
4) Explain the significance of this parameter in object oriented languages?
5) What is a just-in-time (JIT) compiler? What distinguishes dynamic compilation from just-in-time compilation? (5*4=20)

PART – B

Answer any one full question out of the two from each module

MODULE – I

6) 
   a) Consider the following records of a particular language. Let the size of each char variable be 1 byte, int variable be 4 bytes and double be 8 bytes.

   1) \text{struct employee}

   \[
   \begin{align*}
   &\text{char name}[2]; \\
   &\text{int age};
   \end{align*}
   \]

   2) \text{union employee}

   \[
   \begin{align*}
   &\text{char name}[2]; \\
   &\text{int age};
   \end{align*}
   \]
double mark; double mark;
}                    }
.
Draw the memory layout for the records (1) and (2)

b) Explain Logically Controlled Loop with suitable examples.

OR

7)

a) Which of the programming language uses nested-scope rule? Explain the concept of nested-scope rule with an example.

b) What is the use of static links? Compare declaration order in Pascal, Modula-3 and C++.

MODULE - II

8)

a) Explain static link, dynamic link and activation record with help of given figure.

b) Explain database manipulation and searching strategies used in Prolog.
9)

a) Give an overview of Scheme with suitable examples. Write its applications.

b) Explain co-routine? Why cactus-stack is used in co-routine? Distinguish from subroutine?

**MODULE - III**

10)

a) What are the characteristics of scripting languages?

b) Write down the matching strings of following regular expression of a scripting language

   1) /ab(cd{ef}g+)/
   2) /b[aeiou]d/
   3) /0x[0-9a-fA-F]+/

   c) Write short note on

      1) Modifiers and Escape Sequences.
      2) Greedy and Minimal Matches.
      3) Data types of Scripting Language.

**OR**

11)

a) Write short note on Dynamic Method Binding of object oriented languages.

b) Consider the following program

   ```cpp
   class student: public person, public gp_list_node {...
   
   Explain the type of inheritance is used in this program?
   
   c) Write a short note on constructors?

   **MODULE - IV**
12) 

a) Explain why synchronization is necessary in thread?  

b) Explain 
   i) Symbolic debugging  
   ii) Reflection  

OR

13) Explain the working principles of threads. With a neat diagram show the architecture of thread?