Name:.....
Roll No:.....

MAR ATHANASIUS COLLEGE OF ENGINEERING (AUTONOMOUS),

KOTHAMANGALAM - 686666

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.TECH FIRST SERIES EXAMINATION, AUGUST 2026 (S5 CS,DS,AIML)

B24CS3P11 PROGRAMMING PARADIGMS

Max. Marks: 40 Duration: 1.5 Hours

PART A

Answer all questions. Each question carries 3 marks.

1. State three key differences between early binding and late binding **(CO1)**
2. List any three programming language categories with one suitable programming language example for each. **(CO1)**
3. A programmer wants to represent the days of a week in a program. Interpret the advantages of using an enumeration type over integer constants to represent days of the week, with a suitable example. **(CO2)**
4. With the help of a diagram, explain the memory layout of arrays. **(CO2)**

PART B

Answer all questions. Each question carries 14 marks.

5. (a) Describe static and dynamic scope rules. Trace the output of the following pseudo-code under both static and dynamic scoping rules **(CO1)** (7 marks)

```
int x = 10;

void show() {
    printf("%d\n", x);
}

void process() {
    int x = 20;
    show();
}

int main() {
```

```
13      process();
14      return 0;
15  }
```

(b) Assume you have been assigned to recommend a programming language for developing a University Management System. Outline the evaluation criteria used to select a programming language. Based on these criteria, justify your recommendation. **(CO1)** (7 marks)

6. (a) Compare Name Type equivalence and Structure Type equivalence. Discuss a scenario where two Types are structural equivalents but not name equivalents. **(CO 2)** (7 marks)

(b) Illustrate the dangling pointer problem and the memory leak issue associated with pointers using example code. Explain any one heap management method used by runtime environments to mitigate these issues. **(CO 2)** (7 marks)