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

MAR ATHANASIUS COLLEGE OF ENGINEERING (AUTONOMOUS),
KOTHAMANGALAM - 686666
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.TECH SECOND SERIES EXAMINATION, OCTOBER 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. Define the pass-by-result parameter passing mode. How is the value transferred to the caller? **(CO 3)**
2. State any three essential characteristics that define a subprogram. **(CO 3)**
3. Distinguish between a subclass and a subtype. **(CO 4)**
4. Find the output of the following Scheme/LISP expressions:
   (a) (CAR (CDR ’(X Y Z)))
   (b) (QUOTE (+ 10 20))
   (c) (EQ? ’A ’B) **(CO 5)**

PART B

Answer all questions. Each question carries 14 marks.

5. (a) In an online store, a customer gets free shipping if their order total is 1000 rupees or more, and they are either a VIP member OR have a promo code. For all other cases, standard shipping will be applicable. Write equivalent pseudocode for this logic both with and without short-circuit evaluation, then trace the step-by-step execution path for a 3000 rupee order in both approaches to explain how short-circuiting saves computation steps. **(CO 3)** (7 marks)

VISION

“To mould competent computing professionals, innovators, and leaders guided by ethical values and committed to technological advancement and sustainable societal development.”

MISSION

- Provide quality education through strong theoretical foundations, experiential learning, and exposure to emerging computing technologies.
- Cultivate critical thinking, research aptitude, and innovation through problem-based learning, industry interaction, and research initiatives.
- Foster ethical values, leadership, social responsibility, and an aspiration for lifelong learning through professional practices, teamwork, and mentoring.

(b) A cinema uses a guarded command system to update ticket prices (P):
if P > 200 -> P = P - 50 | P > 150 -> P = P + 30 | P <= 150 -> P = P * 2 fi.
For an initial price of P = 240 list all enabled guards, explain how non-deterministic choice between true guards leads to different possible final prices and show the step-by-step calculations for each valid outcome. **(CO 3)** (7 marks)

6. (a) How can developers handle user-defined exceptions in a language that lacks built-in exception handling? Describe the primary techniques used to signal errors and explain the main drawbacks of relying on these manual methods. **(CO 4)** (7 marks)

(b) Explain the different design issues faced for object-oriented languages. **(CO 4)** (7 marks)

VISION

"To mould competent computing professionals, innovators, and leaders guided by ethical values and committed to technological advancement and sustainable societal development."

MISSION

- Provide quality education through strong theoretical foundations, experiential learning, and exposure to emerging computing technologies.
- Cultivate critical thinking, research aptitude, and innovation through problem-based learning, industry interaction, and research initiatives.
- Foster ethical values, leadership, social responsibility, and an aspiration for lifelong learning through professional practices, teamwork, and mentoring.