



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

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END SEMESTER EXAMINATION –NOV/DEC 2025

ELECTRONICS – III SEMESTER BSC

25BSC35A: EMBEDDED CONTROLLERS

Time: 3 Hours

Max. Marks: 80

Instruction: Answer should be written completely in English.

SECTION – A

Answer any **TEN** questions. Each question carries **TWO** marks.

(10X2=20)

1. What is an Integrated Development Environment (IDE)? Give examples.
2. What are SFRs and GPRs?
3. Define Embedded System. Mention any two design parameters.
4. What is direct addressing? Give an example.
5. List any four arithmetic instructions of PIC18F458.
6. What is the purpose of rotate instructions with example.
7. Give the use of BCF and BSF instructions.
8. Distinguish between synchronous and asynchronous serial communication.
9. Define ADC and DAC.
10. What is meant by full duplex communication.
11. Name two digital I/O pins in Arduino.
12. Write any two applications of the Arduino Embedded Controller.
13. What is Proximity sensor?

SECTION -B

Answer any **FIVE** questions. Each question carries **EIGHT** marks.

(5X8=40)

14. Explain the architecture of the PIC18F458 microcontroller in detail.
15. Explain all the software development tools used for embedded systems with suitable examples.
16. Explain the various addressing modes of the PIC18F458 with suitable examples.
17. Write a template for writing assembly programs and explain each section.
18. Compare ADC and DAC applications in industrial control systems.
19. With a neat Diagram explain interfacing a temperature sensor with PIC18F458.
20. Explain the architecture and working of the Arduino platform.
21. Explain the real-time behaviour and timing constraints in embedded systems with Arduino examples.



SECTION – C

Answer any **FOUR** questions. Each question carries **FIVE** marks.

(4X5=20)

22. Analyse the role of emulators and debugging tools in embedded software development.
23. Write a short note on the CCP module and its three modes of operation.
24. The following shows the crystal frequency for three different PIC Based Systems.
Find the Period of the instruction cycle in each case.
a)4 MHZ b)16 MHZ c)20MHZ.
25. Write an Assembly Language program to add two 8-bit numbers using arithmetic instructions.
26. Describe signal conditioning methods for sensors.
27. Explain the interfacing of a PIR motion sensor with Arduino.
28. Evaluate the suitability of Arduino for developing industrial-grade embedded systems.

