



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S6 (R,S) Examinations April 2026 (2019 Scheme)

Course Code: ECT342

Course Name: EMBEDDED SYSTEMS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|--|-----|
| 1 | What is EDLC? List the EDLC models. | (3) |
| 2 | Categorize different types of embedded system. | (3) |
| 3 | Sketch the frame format of HDLC. | (3) |
| 4 | Write notes on context, ISR and interrupt latency. | (3) |
| 5 | Write down bit configuration of CPSR register. | (3) |
| 6 | Compare GPR and SFR. List out different registers of ARM. | (3) |
| 7 | What are the different data types used by floating point co-processor? | (3) |
| 8 | Differentiate between THUMB and ARM instruction set. | (3) |
| 9 | What is RTOS? List the different types of RTOS. | (3) |
| 10 | List out RTOS functional and non-functional requirements. | (3) |

PART B

Answer one full question from each module, each carries 14 marks.

Module I

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|----|---|-----|
| 11 | a) Explain multiple inheritance and derived class in UML. | (8) |
| | b) Illustrate the structural description of UML. | (6) |

OR

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|----|---|-----|
| 12 | a) Define embedded system. Explain any one design example of embedded system. | (8) |
| | b) Elaborate on the iterative EDLC model using a neat diagram. | (8) |

Module II

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|----|--|-----|
| 13 | a) With the help of sketches, explain I ² C connection diagram and I ² C bus protocol. | (8) |
| | b) Detail on SPI interface using necessary diagrams. | (8) |

OR

- 14 a) What are the different types of Input- Output devices used in embedded system design? Explain. (8)
- b) Enlist the different functions of device drivers used for memory, interrupts and bus. (6)

Module III

- 15 a) What are the various modes of ARM processor? Explain. (6)
- b) Elaborate on various ARM development tools. (8)

OR

- 16 a) Elaborate on the ARM 9 architecture with neat diagrams. (8)
- b) i) Explain about different types of ARM instructions with suitable example. (5)
- ii) Write a program to swap content of two registers using ARM. (3)

Module IV

- 17 a) Write note on thumb data processing instructions with suitable examples. (6)
- b) Explain conditional statements and looping using ARM. (6)

OR

- 18 a) Explain THUMB programmers model with necessary diagrams. (7)
- b) Elaborate on Thumb implementation. (7)

Module V

- 19 a) Elaborate on various task synchronization issues. (6)
- b) Define kernel. Discuss the different functions of kernel of an operating system. (8)

OR

- 20 a) Distinguish between process, task and threads. (6)
- b) Explain about various methods used for inter process communication using RTOS. (8)
