

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S,FE) (FT/WP/S4 PT) Examination December 2025 (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

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|----|---|-----|
| 1 | What is an embedded system? Sketch the hardware components of an embedded system. | (3) |
| 2 | List out the objectives of EDLC and mention its different phases. | (3) |
| 3 | Write down the frame format of HDLC. | (3) |
| 4 | Define context switching, ISR and Interrupt latency. | (3) |
| 5 | Write the function of Link register in ARM. | (3) |
| 6 | What are the two types of operating modes in ARM? List out the different ARM processor modes. | (3) |
| 7 | Discuss about any three types of Thumb instruction with suitable example. | (3) |
| 8 | Explain about the Thumb programmers model. | (3) |
| 9 | Define OS. List the different types of RTOS with suitable examples. | (3) |
| 10 | Differentiate between process and thread. | (3) |

PART B*Answer one full question from each module, each carries 14 marks.***Module I**

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|----|--|-----|
| 11 | a) Detail on the operational quality attributes of embedded system design. | (8) |
| | b) Elaborate on the spiral EDLC model with relevant diagrams. | (6) |

OR

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|----|---|-----|
| 12 | a) Give a brief note on the various steps used in embedded system design process. | (8) |
| | b) Discuss about the structural description of embedded system design. | (6) |

Module II

- 13 a) Explain the working of I2C with the help of a neat diagram .Discuss the I2C data transfer protocol. (6)
- b) What is DMA? Explain the working of DMA with a neat diagram. List the different types of DMA. (8)

OR

- 14 a) Elaborate on the various types of memory used for embedded system design. (8)
- b) Discuss about the different functions of device drivers used for memory and interrupts . (6)

Module III

- 15 a) Give a brief note on the ARM register organization. (8)
- b) Discuss about the exceptions of ARM and exception handling steps. (6)

OR

- 16 a) Elaborate on the ARM 7 architecture with neat diagram. (8)
- b) Differentiate between 3 stage single cycle and multi cycle pipeline operation. (6)

Module IV

- 17 a) Elaborate about AMBA bus architecture with neat diagram. (8)
- b) Discuss in detail on the ARM floating point architecture. (6)

OR

- 18 a) Differentiate between Thumb programmers model and ARM programmers model. (8)
- b) With suitable examples elaborate on ARM assembly and C programming. (6)

Module V

- 19 a) Elaborate about various types of OS scheduling algorithms. (8)
- b) Explain the process life cycle with neat diagram. (6)

OR

- 20 a) With a neat diagram, explain the basic structure of an Operating System. List out the function of OS . (8)
- b) Write short notes on deadlock, memory passing and shared memory. (6)
