

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: EC308

Course Name: Embedded Systems

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks

Marks

- | | | |
|---|--|------|
| 1 | a) Enumerate essential functional blocks of an embedded system. | (5) |
| | b) With necessary diagrams, explain the bus architecture of ARM 9 processor. | (10) |
| 2 | a) What is meant by DDLC model? Explain in detail | (8) |
| | b) Explain any two serial communication standards used in embedded systems. | (7) |
| 3 | a) Compare serial communication with parallel communication | (5) |
| | b) Write short note on a) USB b) CAN | (10) |

PART B

Answer any two full questions, each carries 15 marks

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|---|--|------|
| 4 | a) Explain the function of device drivers for handling ISR | (5) |
| | b) With necessary diagrams, explain the events occur during an interrupt operation | (10) |
| 5 | a) Explain the working of Memory device drivers. | (8) |
| | b) What are the features of Embedded C++ ? | (7) |
| 6 | a) With a suitable example, differentiate between testing and validation | (5) |
| | b) What is meant by SoC? Explain with an example. | (10) |

PART C

Answer any two full questions, each carries 20 marks

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|---|--|------|
| 7 | a) How does an RTOS semaphore protect data? Explain by giving an example | (10) |
| | b) With suitable examples, explain the terms i) Rate Monotonic Approach | (10) |
| | ii) EDF Approach | |
| 8 | a) Explain remote procedure call with an example. | (10) |
| | b) With a diagram, explain process management in an embedded OS. | (10) |
| 9 | a) Explain the memory allocation related functions of RTOS | (10) |
| | b) Explain Task Service functions in RTOS | (10) |

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: EC308

Course Name: EMBEDDED SYSTEMS (EC)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) Explain various types of embedded system processors and also write their advantages and disadvantages. (8)
- b) Draw the diagram of I²C frame format. Explain each field. (7)
- 2 a) Explain the different embedded system development life cycle models. (7)
- b) Explain different data transfer modes used in USB bus standard. (5)
- c) Describe the various modes of serial communication. (3)
- 3 a) Discuss briefly the challenges in embedded system design. (5)
- b) Compare RISC and CISC architecture. (3)
- c) What is bus arbitration? Explain the bus arbitration scheme used in CAN bus with an example. (7)

PART B

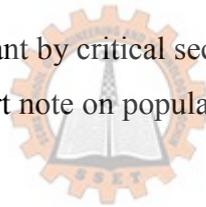
Answer any two full questions, each carries 15 marks.

- 4 a) What is interrupt? What are the sources of interrupt? How it is handled. (8)
- b) What are the features of embedded C++. Explain each one in detail. (7)
- 5 a) Explain about memory devices drivers. (7)
- b) What are the common software tools used for testing and debugging during embedded system development? Explain with examples. (8)
- 6 a) What are the different modes in which a DMA controller transfers data between memory and a peripheral? (3)
- b) Explain any four types I/O devices used in embedded system. (4)
- c) Discuss the hardware and software components required for designing an ATM machine. (8)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Give the structure of a process control block (PCB) and explain each block. (10)
b) Discuss the major functions of a Kernel. (4)
c) Explain the Earliest deadline first scheduling for process management in RTOS. (6)
- 8 a) Explain the concept mailbox and message queue used in IPC. (10)
b) Explain about the memory allocation related functions in Micro C/OS-II. (10)
- 9 a) Discuss the circumstances which lead to priority inversion in RTOS. How can it be resolved? (6)
b) What is meant by critical section of a task? How it can be run by RTOS? (4)
c) Write a short note on popular real-time operating systems. (10)



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