Reg No.:_____ Name:_____

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 I^2C 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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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

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

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 ii) EDF Approach	(10)
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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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 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) Describe the various hardware and software components used in embedded system design. (8)

b) Define the frame structure and various data transfer modes in HDLC. (7)

2 a) With a suitable example, explain the various stages of embedded system design process. (7)

b) With neat sketches, explain the working principle of CAN Bus. (8)

3 a) Describe the various types of Embedded system Development Life-Cycle Models (8)

b) Explain the frame structure of I2C bus (7)

PART B

Answer any two full questions, each carries 15 marks

4 a) With neat sketches, discuss the various operations in DMA Controllers (10)

b) List the features of Embedded C++ (5)

5 a) Discuss the use of ISR in the case of automatic chocolate vending machine (5)

b) Comment on the various debugging techniques used in embedded system design (10)

6 a) With the help of an example, explain the functions of device drivers for on board bus (7)

b) Distinguish between clear-box and black box testing methods in embedded system. List suitable examples. (8)

PART C

Answer any two full questions, each carries 20 marks

7 a) Describe the structure of a Process control block (PCB). (10)

b) Explain the memory allocation related functions in Micro C/OS-II (10)

8 a) Discuss the concept of inter process communication (10)

b) Comment on the basic features of VxWorks RTOS (10)

9 a) Describe the use of mail boxes and remote procedure calls (10)

b) Explain briefly the process management with its states (10)

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth semester B.Tech degree examinations (S), September 2020

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)	What are the different components of embedded hardware?	(5)
	b)	Write short notes on SCI and SPI.	(5)
	c)	What are the challenges in embedded system design?	(5)
2	a)	Explain design and development life cycle model of embedded system.	(7)
	b)	Explain about USB and UART.	(8)
3	a)	Explain CPU bus organization and protocol in detail.	(5)
	b)	Draw and explain architecture of ARM9 processor.	(10)

PART B

Answer any two full questions, each carries 15 marks

4	a)	Explain device drivers with example for handling ISR.	(5)
	b)	What are the different methods for testing software?	(10)
5	a)	What is meant by software validation and debugging? Explain each one in detail.	(8)
	b)	Explain the components of system-on-chip.	(7)
6	a)	Explain handling of I/O devices in embedded system.	(7)
	b)	What are the disadvantages of embedded C++.	(3)
	c)	Explain memory mapping in embedded system.	(5)

PART C

Answer any two full questions, each carries 20 marks

7	a)	What is meant by RTOS? List out its characteristics.	(7)
	b)	What is remote procedure call(RPC) and explain how it works.	(6)
	c)	Discuss the use of mail box in RTOS.	(7)
8	a)	Explain multiple processes in an application.	(8)
	b)	Explain task service and functions.	(7)
	c)	Explain file system organization.	(5)

9	a)	Explain about structures and kernel in RTOS.	(8)
	b)	Explain about message queues in inter process communication (IPC).	(5)
	c)	Briefly explain the task synchronization techniques in IPC.	(7)

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