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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) Examinations April 2026 (2019 Scheme)

Course Code: CST464
Course Name: EMBEDDED SYSTEMS

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	How are embedded system classified?	(3)
2	Differentiate between microprocessors and microcontrollers.	(3)
3	Define hardware-software co-design. List out the fundamental issues.	(3)
4	What are the advantages of co-design methodology?	(3)
5	Define priority inversion in detail.	(3)
6	What are the different criteria for scheduling the selection of scheduling algorithm?	(3)
7	List out the different ways of Mixing Assembly and High level language.	(3)
8	What are the primary objectives of EDLC	(3)
9	Draw use case diagram for IoT monitoring system	(3)
10	Identify components required to design a smart watch	(3)

PART B

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

Module I

11	a)	What are sensors and actuators, and how do they interface with the I/O subsystems.	(9)
	b)	How does a watchdog timer work and what is its purpose.	(5)

OR

12	a)	Explain embedded system design process with real-world example.	(10)
	b)	What are the applications of embedded system?	(4)

Module II

13	a)	Explain the co-design process. What are the fundamental issue in hardware software co-design?	(10)
	b)	Design the authentication process of an ATM machine using state transition	(4)

diagram.

OR

14 a) Briefly describe the sequential program model and concurrent model in detail with an example. (10)

b) Draw a CDFG for the following programme fragment (4)

```
fun0();
if (cond1) fun1();
else fun2();
fun3();
switch (test1) {
        case 1: fun4();
                break;
        case 2: fun5();
                break;
        case 3: fun6();
                break;
}
fun7();
```

Module III

15 a) Explain in detail different task communication mechanism. (10)

b) List difference between process and threads. (4)

OR

16 a) What are the various task synchronization issues? (10)

b) How to choose an RTOS for an Embedded design? List out the functional requirements. (4)

Module IV

17 a) Draw and explain waterfall modelling technique in detail. (9)

Differentiate In system programming (ISP) and In Application Programming (IAP) (5)

OR

18 Explain with suitable example, the Spiral and Incremental life cycle models adopted in embedded product development. (14)

Module V

19 a) Illustrate the working of an automated meter reading (AMR) system with suitable diagram. (9)

b) Draw and explain a sequential diagram representing the working of a battery operated smart card reader (5)

OR

20 a) Explain in detail about any two vehicular networks. (8)

b) Explain Smart Home Using IoT with suitable diagram. (6)

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