

Reg. No.

Question Paper Code

21341

**M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022**

First Semester

**M.E. - Embedded System Technologies**

**20PESPC103 - DESIGN OF EMBEDDED SYSTEMS**

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

- |   | <i>Marks,<br/>K-Level,CO</i> |
|---|------------------------------|
| 1. How embedded systems are different from conventional PC?                           | 2,K1,CO1                     |
| 2. What are the different types of memory used in embedded system design?             | 2,K1,CO1                     |
| 3. Mention the concept of plug and play.  | 2,K1,CO2                     |
| 4. Why device drivers are necessary for interfacing a device with a processor?        | 2,K2,CO2                     |
| 5. Distinguish non preemptive and preemptive scheduling in RTOS.                      | 2,K2,CO3                     |
| 6. What is the use of semaphore?  | 2,K1,CO3                     |
| 7. Define UML.  | 2,K1,CO4                     |
| 8. Give the advantages of emulator.   | 2,K1,CO4                     |
| 9. Mention the importance of sensors and actuators in embedded applications.          | 2,K1,CO5                     |
| 10. Compare High Speed Electronic Control Unit and Low Speed Electronic Control Unit. | 2,K2,CO5                     |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) With neat diagram, explain the working of DirectMemory Access. 13,K2,CO1
- OR**
- b) Discuss briefly on memory management of overlap memory on cache replacement techniques. 13,K2,CO1
12. a) Explain how serial data transfer is performed in I2C bus. Also brief the steps involved in transfer of a byte using I2C. 13,K2,CO2
- OR**
- b) (i) Explain the functions of device drivers. 7,K2,CO2  
(ii) List out the steps involved in writing a device driver. 6,K1,CO2

13. a) What is shared data problem? Demonstrate how shared data problem will be handled in real time system. *13,K2,CO3*

**OR**

b) Describe the features of Vx works RTOS. *13,K2,CO3*

14. a) List the various UML diagram and examine the purpose of each diagram. *13,K2,CO4*

**OR**

b) With neat schematic explain briefly about remote debuggers and debug kernels. *13,K2,CO4*

15. a) Mention the different communication buses used in automotive applications and explain. *13,K2,CO5*

**OR**

b) Discuss in detail how adaptive cruise control is implemented in a car. *13,K2,CO5*

**PART - C (1 × 15 = 15 Marks)**

16. a) Examine the classic embedded product development life cycle model and discuss about conceptualization. *15,K3,CO6*

**OR**

b) Demonstrate the phenomenon of Linear/waterfall model in embedded system design with an example. *15,K3,CO6*