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**B. TECH.**  
**(SEM -VII) THEORY EXAMINATION 2021-22**  
**EMBEDDED SYSTEMS**

**Time: 3 Hours****Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 7 = 14**

- (a) Explain application of embedded?
- (b) Define Sensors and Actuators.
- (c) What are ASICs and PLDs?
- (d) Define RTOS.
- (e) What is task in CPU scheduling?
- (f) Briefly explain device drivers.
- (g) What is remote procedure call?

**SECTION B****2. Attempt any three of the following:****7 x 3 = 21**

- (a) Define an Embedded System? Explain the characteristics of Embedded Systems
- (b) Write difference between embedded system and general computing system.
- (c) Explain the case study of internet enable embedded system.
- (d) What is memory shadowing? Explain in detail about memory shadowing with its advantages.
- (e) What is Oscillator Unit? Explain the role of Real Time Clock in embedded system.

**SECTION C****3. Attempt any one part of the following:****7 x 1 = 7**

- (a) Explain the memory organization in embedded system. Explain automobile application in embedded system.
- (b) How the CPU utilization can be improved by pipelining and superscalar. Explain CPU bus and bus protocol.

**4. Attempt any one part of the following:****7 x 1 = 7**

- (a) What do you mean memory management? Explain working of DMA.
- (b) Write difference between general purpose and domain specific processors.

**5. Attempt any one part of the following:****7 x 1 = 7**

- (a) Explain different types of operating system. How task scheduling is done in operating system.
- (b) Explain state machine model and Sequential Program Model.

**6. Attempt any one part of the following:****7 x 1 = 7**

- (a) Explain concept of Task communication shared memory and message passing system.
- (b) Discuss Serial Bus communication protocols. How it is useful in networking of embedded systems.

**7. Attempt any one part of the following:****7 x 1 = 7**

- (a) Name and explain three structure or components that are commonly used in embedded system.
- (b) Explain RTOS. Explain different task synchronization techniques.