B. TECH.
(SEM VI) THEORY EXAMINATION 2022-23
EMBEDDED SYSTEM

Time: 3 Hours   *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt *all* questions in brief.   **2 x 10 = 20**

a.   List out the challenges in building an embedded system.

b.   How SPI is different from other serial interfaces?

c.   Discuss the functions of RTOS?

d.   List the different phases of EDLC.

e.   Explain state machine model?

f.   Mention the different states of thread.

g.   Discuss remote procedure call?

h.   Define Sensors and Actuators.

i.   Discuss watchdog timer?

j.   Discuss shared memory.

SECTION B

2.   Attempt any *three* of the following: **10 x 3 = 30**

a.   List and brief the main characteristics of embedded systems that distinguish such systems from other computing systems.

b.   Explain the terminologies semaphores, pipes and shared memory in RTOS.

c.   Provide various communication strategies for embedded systems.

d.   With suitable diagram explain in detail about the concept of washing machine application.

e.   Explain the memory management. Also explain working of DMA.

SECTION C

3.   Attempt any *one* part of the following: **10 x 1 = 10**

a.   Discuss Oscillator unit. Explain the role of real time clock in embedded system.

b.   Discuss serial bus communication protocols. Also discuss its use in networking of embedded systems.

4. **Attempt any *one* part of the following:**   **10 x 1 = 10**

a.   Explain the product life-cycle curve of an embedded product development.

b.   Discuss the advantages and disadvantages of edge-triggered and level-triggered interrupts?

5. **Attempt any *one* part of the following:**   **10 x 1 = 10**

a.   Discuss the various techniques of task synchronization.

b.   Describe timing and clock in embedded system with relevant example.

6. **Attempt any *one* part of the following:**   **10 x 1 = 10**

a.   Explain various families of ARM Processors. Also mention typical features of each.

b.   Discuss the role of RAM and ROM in embedded system. Explain.

7. **Attempt any *one* part of the following:**   **10 x 1 = 10**

a.   Brief the issues of real time operating systems.

b.   Give the brief content of the following terms:
       i)   Serial Peripheral Interface
       ii)   Inter Integrated Circuits