Paper Id: 110721 Roll No: | | | | | | | | | | |

B. TECH.
(SEM-VII) THEORY EXAMINATION 2019-20
EMBEDDED SYSTEMS

Time: 3 Hours *Total Marks: 70*

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

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

a. What is Semaphore?
b. What is an embedded system? Explain the different application of embedded system in brief.
c. Explain synchronous approach to embedded system design in brief.
d. In what ways CISC and RISC processor differ?
e. What is the difference between synchronous and asynchronous sequential circuits?
f. What do you mean by frequency spectrum?
g. What is logic Analyzer?

SECTION B

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

a. What is Application Specific Integrated Circuit (ASIC)? Explain the role of ASIC in embedded system design.
b. Explain various families of ARM Processors. Also mention typical features of each.
c. Provide various communication strategies for embedded systems.
d. Describe timing and clock in embedded system with relevant example.
e. What is the role of RAM and ROM in and embedded system?

SECTION C

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

(a) Discuss functional model versus architecture models of an Embedded system
(b) Explain the product Life-Cycle curve of an embedded product development.

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

(a) What is process state diagram? Explain the meaning of worst-case interrupt Latency.
(b) The availability of an embedded product is 90%. The Mean Time between failure (MTBF) of the product is 30 days. What is the Mean Time to Repair (MTTR) in days/hour for the product?

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

(a) Explain the necessity and Non-necessity of RTOS in Embedded System.
(b) What is Digital Signal processor? Explain the role in embedded system design.

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

(a) Explain message queue mechanism for interprocess communication.
(b) Explain the role of IDE for embedded software development.

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

(a) Explain the serial communication using I2C, CAN, USB in detail.
(b) Explain the testing steps on host machine. Why host system is used for most of the development?

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