

B.Tech IV Year I Semester (R15) Regular & Supplementary Examinations November/December 2019

EMBEDDED SYSTEMS

(Common to ECE & EIE)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is an embedded system? What are the components of embedded system?
 - Classify the processors in embedded system.
 - How is ARM processor different from other processors?
 - Write any four differences between Von Neumann and Harvard architecture.
 - Explain the role of sensors in embedded system design.
 - Draw the interconnection of external devices with microprocessor.
 - What is the purpose of using RESET and NMI?
 - What are benefits of Real Time Clock?
 - Difference between synchronous and asynchronous communication.
 - What are the advantages and disadvantages of SPI?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Write about different types of memory devices used in embedded systems.
(b) Explain the design process of embedded systems.

OR

- 3 (a) Write about host and target concepts.
(b) What are the different types of embedded processors? Explain.

UNIT – II

- 4 (a) Differentiate the design philosophy of CISC and RISC and list out salient feature of ARM cortex processor.
(b) Explain about I/O mapped I/O vs. Memory mapped I/O.

OR

- 5 (a) Explain the block diagram of TM4C Embedded processor in detail.
(b) Explain about the addressing modes of TM4C.

UNIT – III

- 6 (a) Explain about the various building blocks of an embedded controller.
(b) Explain about the use of software tools for development of an embedded system design.

OR

- 7 (a) Explain the design cycle development of embedded system.
(b) Explain about In-Circuit Emulator (ICE) in an embedded system.

UNIT – IV

- 8 (a) With neat diagram, explain Hibernation module on TM4C.
(b) Explain the functionalities of GPIO control and programming system registers.

OR

- 9 Explain about interrupts in ARM CORTEX M4 Microcontroller.

UNIT – V

- 10 (a) What is asynchronous communication? Explain.
(b) Draw & explain the architecture of IOT.

OR

- 11 Explain the implementation procedure and programming I2C and SPI interface using TM4C.
