

Roll No

MCTA-302(C)/MCIT-302(D)**M.E./M.Tech., III Semester**

Examination, June 2016

Embedded Systems (Elective)*Time : Three Hours**Maximum Marks: 70*

- Note:** i) This paper contain total eight questions.
ii) Attempt any five questions.
iii) All questions carry equal marks.

1. a) Draw basic block diagram of an embedded system. Describe each block in brief with suitable example. 7
b) What are the selection criteria of a processor for an embedded system? 7
2. a) Draw flow chart of embedded software development tool chain. 7
b) Define : 7
i) Cross compiler
ii) Linker
iii) Locator
iv) Loader
3. a) Compare different software architectures used for implementing tasks in an embedded system. 7
b) Explain, how change in task code affect the response time of other tasks in different software architecture. 7

4. a) Design an embedded system to implement traffic light connal installed on a cross of a major street. Assume suitable realistic data for the design. 7
b) Draw internal architecture of 8-bit microcontroller. Also explain meaning of following SFRs
i) TCON
ii) SCON 7
5. a) What is process state diagram. Explain the meaning of worst case interrupt latency. 7
b) Describe share data problem with suitable example and also suggest a suitable solution. 7
6. a) Why semaphore is used for inter process communication. Write suitable code for process synchronization using semaphores. 7
b) Explain message queue mechanism for inter process communication. 7
7. Write short note on any two : 14
a) CANBus
b) I²C bus
c) Serial communication
8. a) Write a program in assembly level language for generating a square wave on pin P0.0 of 8051 microcontroller. The frequency of square wave is 100 KHz and crystal of 12MHz is connected with 8051. 7
b) Write a short note on interrupt mechanism of 8051. also describe usage of different SFRs for control and configuration of interrupt of 8051. 7