

ME/M.Tech May, 2024
2nd Sem. (Copy 2)

Exam.Code:0970
Sub. Code: 7051

2054

M.E. (Electronics and Communication Engineering)
Second Semester
ECE-1201: Embedded System Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:

- a) How does an embedded system communicate with the outside world?
- b) What is the size of the program counter in the PIC16F8XX?
- c) What is an I²C bus?
- d) Name any two applications where Intel's MMX technology is used?
- e) What do you mean by hardware software co-design? (5x2)

UNIT - I

- II. a) What are the different processes in system level design of embedded systems? Explain each by taking an example of an embedded system.
b) Describe the register file structure of PIC 16F8XX family of microcontrollers. (2x5)
- III. a) Draw the block diagram of Timer1 and configure its operation in Synchronized Counter Mode. Explain the working of the timer in this mode.
b) Explain the interfacing of seven segment display with the PIC16F8XX? Explain with suitable illustrations. (2x5)
- IV. a) With the help of diagram, explain the program model for event controlled system.
b) How is modelling of multiprocessor systems done? Describe briefly the different models in a multiprocessor system with suitable diagrams. (2x5)

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UNIT - II

- V. a) What are ASICs? Briefly mention some of its applications.
b) What are the features of the MIPS processors? Explain its architecture. (2x5)
- VI. a) What are some of the salient features of the ARM processor? Explain the architecture of the ARM series of processors.
b) What are the disadvantages of CPLDs? How can FPGAs overcome those shortcomings? (2x5)
- VII. a) Give some applications of embedded systems in the area of networking. What are the challenges faced in this area? How do embedded systems help to overcome these challenges?
b) What are wireless sensor networks? What are the different components in its architecture? Explain briefly. (2x5)

x-x-x