

# C.U.SHAH UNIVERSITY

## Summer Examination-2017

**Subject Name: Embedded System Design**

**Subject Code: 5TE01EMD1**

**Branch: M.Tech(VESD)**

**Semester: 1**

**Date: 24/03/2017**

**Time: 10:30 To 01:30**

**Marks: 70**

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

### SECTION – I

- |            |  |             |
|------------|--|-------------|
| <b>Q-1</b> | <b>Attempt the Following questions</b>   | <b>(07)</b> |
|            | a. Define the term system.   | 1           |
|            | b. Define the term an embedded system.   | 1           |
|            | c. State the constraints consider when an embedded system is designed.   | 1           |
|            | d. State any five examples of embedded systems.  | 1           |
|            | e. State the different interrupt sources in embedded processors or controllers.  | 1           |
|            | f. Define the term RTOS.   | 1           |
|            | g. Define the term development kit.  | 1           |
| <b>Q-2</b> | <b>Attempt all questions</b>   | <b>(14)</b> |
|            | a) Explain in detail different interrupt handling mechanism.   | 6           |
|            | b) Classify the embedded systems and explain each of them in detail.   | 4           |
|            | c) Explain in brief any four concepts used during design process in embedded system.   | 4           |
| <b>OR</b>  |  |             |
| <b>Q-2</b> | <b>Attempt all questions</b>   | <b>(14)</b> |
|            | a) Explain in detail source engineering tool.  | 6           |
|            | b) Explain in detail skills required for an embedded system designer   | 4           |
|            | c) Draw the diagram of the components of embedded system hardware. Explain in brief main three components embedded into embedded system. | 4           |
| <b>Q-3</b> | <b>Attempt all questions</b>   | <b>(14)</b> |
|            | a) Write short notes on “embedded processors in a system”.   | 7           |
|            | b) What is the full form of IDE? Explain its features.   | 7           |
| <b>OR</b>  |  |             |
| <b>Q-3</b> | a) Explain in detail different challenges in embedded system design.   | 7           |
|            | b) Explain in detail with diagrams device programmer   | 7           |



## SECTION – II

- Q-4**      **Attempt the Following questions**      **(07)**
- a. Explain in brief big-endian data representation.      **1**
  - b. Explain in brief little-endian data representation.      **1**
  - c. Explain in brief Harvard architecture.      **1**
  - d. Explain in brief von Neumann architecture.      **1**
  - e. What data types does the C55x support?      **1**
  - f. How many accumulators does the C55x have?      **1**
  - g. How many types of interrupts support by ARM? State their names.      **1**
- Q-5**      **Attempt all questions**      **(14)**
- a) Explain in detail with examples different addressing modes of ARM 7 processor.      **7**
  - b) Write short notes on “ caches as memory system mechanisms”      **7**
- OR**      **(14)**
- Q-5**      a) Explain in brief supervisor mode, exceptions and traps w.r.to. ARM7 processor.      **7**
- b) Write short notes on “ MMUs as memory system mechanisms”      **7**
- Q-6**      **Attempt all questions**      **(14)**
- a) State the steps perform by ARM7 and C55X when responding to an interrupt.      **7**
  - b) Explain in detail data flow graphs.      **7**
- OR**
- Q-6**      **Attempt all Questions**      **(14)**
- a) Explain in detail CPU performance.      **7**
  - b) Explain in detail control/data flow graphs.      **7**

