

# C.U.SHAH UNIVERSITY

## Summer Examination-2017

**Subject Name: Embedded Network and Controllers**

**Subject Code: 5TE01ENC1**

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

**Semester: 1**

**Date: 22/03/2017**

**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. Draw the industrial automation pyramid.   | 1           |
|            | b. In industrial automation pyramid, what are uses of controller level?  | 1           |
|            | c. In industrial automation pyramid, what are uses of process control level?                                       | 1           |
|            | d. Explain in brief the term field buses used in embedded networking.  | 1           |
|            | e. Explain in brief the term point to point used in embedded networking.   | 1           |
|            | f. Explain in brief the term multicast used in embedded networking.  | 1           |
|            | g. Explain in brief the term broadcast used in embedded networking.  | 1           |
| <b>Q-2</b> | <b>Attempt all questions</b>   | <b>(14)</b> |
|            | a) Draw the ISO 7-layer reference model and explain physical and data link layer.                                  | 6           |
|            | b) What do you mean by serial and parallel communication? Explain in detail synchronous serial input with diagram. | 4           |
|            | c) Explain with example how placing embedded systems into the automation pyramid.                                  | 4           |
| <b>OR</b>  |  |             |
| <b>Q-2</b> | <b>Attempt all questions</b>   | <b>(14)</b> |
|            | a) Enlist different resource constraints typical for embedded systems and explain in detail any three of them.     | 6           |
|            | b) Explain asynchronous serial input and output with diagrams.   | 4           |
|            | c) Explain the term master/slave with diagrams used in embedded networking.  | 4           |
| <b>Q-3</b> | <b>Attempt all questions</b>   | <b>(14)</b> |
|            | a) Enlist different serial communication devices. Explain any two.   | 7           |
|            | b) Enlist different parallel bus communication protocols. Explain any two of them in detail.                       | 7           |
| <b>OR</b>  |  |             |
| <b>Q-3</b> | a) Enlist different serial bus communication protocols. Explain any two in detail.                                 | 7           |
|            | b) Explain different sophisticated interfacing features in device ports.   | 7           |



## SECTION – II

- Q-4 Attempt the Following questions (07)**
- a. Give brief introduction about I<sup>2</sup>C bus. 1
  - b. State the applications of I<sup>2</sup>C bus. 1
  - c. How many modes do I<sup>2</sup>C bus have? State them. 1
  - d. Give full form of CAN bus. 1
  - e. Give brief introduction about CAN bus. 1
  - f. Draw the CAN protocol layers diagram. 1
  - g. In how many ways data can be transferred on a USB bus? Enlist them. 1
- Q-5 Attempt all questions (14)**
- a) Explain in detail I<sup>2</sup>C data format with diagrams 7
  - b) Enlist the different types of frames available in CAN bus. Explain in detail with diagram standard data frame with diagram. 7
- OR**
- Q-5**
- a) Explain in detail w.r.to I<sup>2</sup>C bus communication following with diagrams 7  
1. Master writing to slave 2. Master reading from slave.
  - b) Explain in detail bit timing in CAN bus with diagram. 7
- Q-6 Attempt all questions (14)**
- a) State different USB states and explain in brief each of them. 7
  - b) Explain in detail advantages and limits of Ethernet. 7
- OR**
- Q-6 Attempt all Questions (14)**
- a) What do you mean by USB descriptors? Explain device descriptor in detail. 7
  - b) Explain in detail configuration descriptor. 7

