

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

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|------------|--|-------------|
| Q-1 | Attempt the Following questions | (07) |
| | 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 |
| Q-2 | Attempt all questions | (14) |
| | 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 |
| OR | | |
| Q-2 | Attempt all questions | (14) |
| | 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 |
| Q-3 | Attempt all questions | (14) |
| | 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 |
| OR | | |
| Q-3 | 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 I²C bus. 1
 - b. State the applications of I²C bus. 1
 - c. How many modes do I²C 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 I²C 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 I²C 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

