Enrollment No: _____ Exam Seat No:_____

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

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 I^2C bus.	**1**
	b.	State the applications of I^2C bus.	**1**
	c.	How many modes do I^2C 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^2C 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	**(14)**
Q-5	**a)**	Explain in detail w.r.to I^2C bus communication following with diagrams 1. Master writing to slave 2. Master reading from slave.	**7**
	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**