Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE(MINOR) - SEMESTER–VI EXAMINATION – SUMMER 2023

Subject Code:116AL01 Date:10-08-2023

Subject Name:Data Communication and Embedded Systems in Electrical Vehicles

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	List out requirements for bus systems.	**03**
	(b)	On the basis of data rates classify bus systems	**04**
	(c)	List out various network topology and explain any two in detail.	**07**
Q.2	**(a)**	Explain the importance of bus system in the modern vehicles.	**03**
	(b)	What is embedded system? List out various components of embedded system.	**04**
	(c)	What is V2X? Give any two examples of V2X communication.	**07**
		OR	
	(c)	What is IEEE 802.11P? Explain with neat diagram the 802.11P.	**07**
Q.3	**(a)**	What is coupling of networks.	**03**
	(b)	Give full form of below (1) WAVE (2) VANET (3) TCP (4) OSI	**04**
	(c)	Compare CAN-FD, LIN and MOST bus.	**07**
		OR	
Q.3	**(a)**	Give full form of below (1) MOST (2) LIN (3) CAN-FD	**03**
	(b)	Enlist advantage and disadvantages of CAN bus.	**04**
	(c)	Elaborate standard CAN data frame.	**07**
Q.4	**(a)**	What is DSRC? Give example of the same.	**03**
	(b)	What is MOST bus? Where it is used?	**04**
	(c)	Explain with neat diagram the operation of ARP, RARP.	**07**
		OR	
Q.4	**(a)**	What is bit stuffing in CAN?	**03**
	(b)	What is ITS? Give example of the same.	**04**
	(c)	What is TCP/IP protocol? Explain it with neat diagram.	**07**
Q.5	**(a)**	What is CAN open?	**03**
	(b)	Compare FDM and TDM.	**04**
	(c)	Elaborate FlexRay frame format.	**07**

OR

Q.5	**(a)**	What is Bus Gurdian(BG) in FlexRay protocol? Explain its function.	**03**
	(b)	What is LIN protocol? Draw LIN message format.	**04**
	(c)	What are the latest trends in vehicular networking? Write competitive advantages of new car networking protocols.	**07**

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