Reg. No. : | | | | | | | | | | |

Question Paper Code: 36503

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Sixth Semester

Electronics and Instrumentation Engineering

01UEI603 - REAL TIME EMBEDDED SYSTEMS ARCHITECTURE

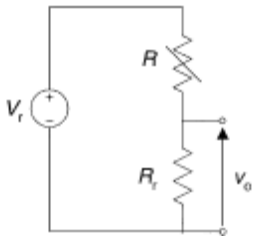
(Regulation 2013)

Duration: 1:45 hour Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. The MGS 1100 CO gas sensor (Motorola) has 1000 *kΩ* in air, from 30 *kΩ* to 300 *kΩ* (150 *kΩ* typical) for CO concentration of 60 x 10^{-6} (R_{60}), and a ratio R_{60} / R_{400} = 2:5 (typical). If the allowable voltage across the sensing resistor and power dissipation in it are 5 *V* and 1 *mW*, design a voltage divider according to figure shown for such a sensor if the expected CO concentration range is from 0 to 400 x10^{-6}.



2. Draw the circuit diagram of differential amplifier based on single op-amp and four matched resistors.

3. Write the output equation for capacitance bridge analog linearization with a circuit diagram.

4. Define debugging.

5. What is an embedded system?

6. What are the characteristics of an embedded system?

7. List the limitations of orifice plate.

8. Write a note on square root extractors.

9. Write a note on instrument index sheet.

10. Define piping and instrumentation diagram.

11. List the features of 8051.

12. List the features of 8051.

13. How the speed of stepper motor can be controlled?

14. Define debugging.

15. What are the complicating factors in embedded system design?

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Draw the functional block diagram of 8051 and explain each block. (10)

17. Describe in detail about

    (i) Data transfer instruction (10)

18. Describe in detail about:

    (i) Memory management system (10)

19. List the serial communication bus and explain I^2C bus and CAN bus. (10)

20. Describe about the fifteen-point strategy for synchronization is suggested for real time programming for an embedded system. (10)