

315338

25226

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: 10
- a) State the difference between Synchronous and Asynchronous communication. (Any two points)
 - b) What is the role of RTC (Real Time Clock) in Embedded system.
 - c) State four characteristics of embedded system.
 - d) State the purpose of watchdog timer.
 - e) State the function of following pins of LCD:
 - i) RS
 - ii) R/W.
 - f) Mention two communication protocol supported by AVR microcontrollers.
 - g) List out features of Microkernels (Any four)

P.T.O.

2. Attempt any THREE of the following:**12**

- a) Explain following selection criteria for embedded system:
 - i) Flexibility
 - ii) Maintainability
 - iii) Reliability
 - iv) NRE Cost.
- b) Compare Hard Real time and Soft Real time on the basis of:
 - i) File size
 - ii) Response time
 - iii) Validation
 - iv) Performance.
- c) Explain any four advantages of PIC microcontroller over 89C51 microcontroller.
- d) Draw the interfacing diagram of D.C. motor with Arduino Uno.

3. Attempt any THREE of the following:**12**

- a) With suitable diagram explain interfacing of Seven Segment LED with Arduino.
- b) State different types of embedded system. Describe any one in detail.
- c) State various sleep modes in AVR microcontroller and explain any two in detail.
- d) Compare Zigbee and Bluetooth Protocol. (any four points)

4. Attempt any THREE of the following:**12**

- a) Draw AVR Microcontroller Architecture and describe in brief.
- b) Explain the publisher-subscriber model of GOOSE protocol.
- c) Compare Arduino Nano and Arduino Mega Boards. (Any four points)
- d) With suitable data frame format explain CAN protocol.
- e) Explain Round Robin with priority scheduling algorithm.

5. Attempt any TWO of the following: 12

- a) Explain I²c frame format. State two advantages and two disadvantages.
- b) Compare RISC and CISC Architectures. (Any six points)
- c) Explain how deadlock occurs state two strategies to prevent deadlock in RTOS.

6. Attempt any TWO of the following: 12

- a) Sketch the block diagram of ATmega 8 and describe the function of each block.
 - b) Write a note on LORA Communication Protocol highlighting its:
 - i) Working
 - ii) Advantages
 - iii) IoT uses.
 - c) Write a program for ATmega 328 to read a temperature from LM35.
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