[6262]-104

T.E. (E & TC)

EMBEDDED PROCESSOR

(2019 Pattern) (Semester- II) (Elective-II) (304195D)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

    1)   *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*

    2)   *Neat diagrams must be drawn wherever necessary.*

    3)   *Figures to the right side indicate full marks.*

    4)   *Assume suitable data if necessary.*

    5)   *Use of Calculator is allowed.*

Q1) a)   Draw and explain interfacing diagram of GSM using UART with LPC 2148. What are AT commands?   **[6]**

    b)   Explain UART module of LPC2148 in short.   **[6]**

    c)   List the features of on chip ADC of LPC2148. Explain the function of bits in ADC Control Register.   **[6]**

OR

Q2) a)   Draw an interfacing diagram of DHT11 with LPC2148 and write an algorithm to display the temperature on LCD.   **[6]**

    b)   Write the SFR associated with DAC & with algorithm explain how DAC can be used to generate ramp waveforms.   **[6]**

    c)   Draw an interfacing diagram of servomotor with LPC2148 and write down the code to rotate the motor in clockwise direction.   **[6]**

Q3) a)   Write the features of STM32F4xx.   **[9]**

    b)   Explain CMSIS Standard use for Firmware development.   **[8]**

OR

Q4) a)   Draw and explain the memory map of STM32F4xx.   **[9]**

    b)   Differentiate between CORTEX A, R, M processors   **[8]**

P.T.O.

Q5) a) Enlist various registers required to configure Serial Communication of STM32F4xx Microcontroller. Explain any one with suitable example. **[6]**

b) Draw an interfacing diagram to interface LDR sensor with STM32F4xx microcontroller and write algorithm/ flowchart to display the light parameter on LCD. **[6]**

c) Enlist various registers required to configure Timers of STM32F4xx Microcontroller. Explain any one with suitable example. **[6]**

OR

Q6) a) Draw an interfacing diagram and write a C program to blink LED's connected to Pin numbers (Port D) PD12,13,14 and 15 using STM32F4xx Controller. **[6]**

b) Draw an interfacing diagram and write a C program to interface "7-Segment" with STM32F4xx controller and display count digit "1" or "7" on it. **[6]**

c) Draw an interfacing diagram to interface MQ3 sensor with STM32F4xx and write algorithm/ flowchart to display the Gas percentage parameter. **[6]**

Q7) a) Draw an interfacing diagram and write a C program to interface accelerometer MPU 6050 using STM32F4xx microcontroller. **[9]**

b) Draw an interfacing diagram and write a C program to interface Ultrasonic Sensor HC-SR04 using STM32F4xx microcontroller. **[8]**

OR

Q8) a) Write the features of CAN bus? Explain CAN bus frame? **[9]**

b) Draw an interfacing diagram and write algorithm to Control DC Motor using PWM using STM32F4xx microcontroller. **[8]**