Total No. of Questions : 8]

SEAT No. :

P-7601

[Total No. of Pages : 2

[6180]-120
T.E. (E & TC)
EMBEDDED PROCESSORS
(2019 Pattern) (Semester - II) (304195D) (Elective - II)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data; if necessary.***

Q1) a) With diagram explain LCR Register related with serial communication. How baud rate can be set? **[6]**

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

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

OR

Q2) a) Draw interfacing diagram of GPS using UART with LPC 2148. How coordinates are extracted from string received by GPS module. **[6]**

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

c) Draw and explain interfacing of DHT11 with LPC2148. Write algorithm/flowchart to display temperature and humidity. **[6]**

Q3) a) Compare cortex processors over ARM7 for embedded system design. **[6]**

b) Write a note on 'Modes of ARM CORTEX M4'. **[6]**

c) Explain programmer's model of ARM CORTEX STM32F4xx. **[6]**

OR

P.T.O.

Q4) a) List the applications of ARM Cortex processors. List features of ARM Cortex processor. **[6]**

b) Draw and explain the memory map of STM32F4XX. **[6]**

c) Draw and explain CMSIS standard for firmware development in ARM Cortex based system. **[6]**

Q5) a) What are the features of GPIO of STM32F4XX. Write a note on different types of GPIO registers of STM32F4xx. **[7]**

b) Draw an interfacing diagram and write a C program to interface and flash LED using STM32F4xx microcontroller. **[5]**

c) Draw an interfacing diagram to interface LDR sensor with STM32F4xx microcontroller and write algorithm / flowchart to display the light parameter on LCD. **[5]**

OR

Q6) a) Enlist various features of Timer / Counter and describe SFR registers related with timer / counter. Write algorithm / flowchart to generate 5 ms time delay using timer. **[7]**

b) Enlist the features of on chip ADC & DAC of STM32F4xx controller. **[5]**

c) Draw an interfacing diagram to interface MQ3 sensor with STM32F4xx and write algorithm / flowchart to display the Gas percentage parameter. **[5]**

Q7) a) Explain the architecture and operation of CAN bus with reference to STM32F4xx microcontroller. Discuss the CAN Bus Frame. **[9]**

b) Draw an interfacing diagram of STM32F4xx Interfacing with accelerometer MPU 6050. Write algorithm / flowchart to display the parameter. **[8]**

OR

Q8) a) Write detailed note on PWM. With interfacing diagram, show speed of DC Motor can be changed using PWM in STM32F407XX. **[9]**

b) What are features of Ultrasonic sensor HCSR04? Explain interfacing with STM32F407XX. Write algorithm! flowchart to display distance on LCD. **[8]**

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