

Total No. of Questions : 8]

SEAT No. :

PE-2566

[Total No. of Pages : 2

[6583]-96

T.E. (E & TC)

EMBEDDED PROCESSORS

(2019 Pattern) (Semester - VI) (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) Draw and explain interfacing diagram of GPS using UART with LPC 2148. How latitude and longitude can be found with NEMA standard?[9]
- b) State features of ADC in LPC2148, Explain the Onchip ADC using Vectored Interrupt (VIC) [9]

OR

- Q2)** a) Draw an interfacing diagram of DHT11 with LPC2148 and write an algorithm to display the temperature on LCD. [9]
- b) Draw and explain interfacing of EEPROM with LPC2148 using I2C bus. Which are the SFRs involved in I2C bus. [9]

- Q3)** a) What are the features and advantages of ARM CORTEX M4 in embedded system? Compare A, R & M series of Cortex processors. [9]
- b) Draw and explain architecture of STM32F4xx. [8]

OR

- Q4)** a) Draw and explain CMSIS standard for firmware development in ARM Cortex based system. [9]
- b) Describe various interrupts and exceptions in STM32F4XX microcontroller? [8]

P.T.O.

**Q5) a)** 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. [9]

b) Write a program to generate 100 ms time delay using timer. Assume external clock frequency of 16 MHz [9]

OR

**Q6) a)** Enlist various registers required to configure Serial Communication of STM32F4xx Microcontroller. Explain any one with suitable example.[9]

b) Enlist the features of on chip ADC & DAC of STM32F4xx controller. Write program to generate ramp waveform using DAC. [9]

**Q7) a)** Write program to control the Speed of DC motor interfaced with STM32F407XX. [9]

b) Explain with Concept of transmitting and receiving of data using CAN bus. [8]

OR

**Q8) a)** Draw an interfacing diagram of STM32F4xx with accelerometer MPU 6050. Write algorithm to display the acceleration parameter in x, y, & z directions. [9]

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

