Total No. of Questions :10]

SEAT No. :

P1733

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T.E. (E & TC)

EMBEDDED PROCESSORS

(2012 Course) (Semester - II) (End Semester) (304191)

Time : 2½ Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) State & explain different operating modes of ARM7. **[6]**

b) Draw interfacing diagram to interface LED bank to port pins p 0.0 - p 0.3 of LPC2148. Write down the algorithm to blink the LEDs. **[4]**

OR

Q2) a) What is the need of Pin connect Block in LPC 2148? Explain the role of PINSELX registers. **[6]**

b) Explain the following ARM instructions (any two) **[4]**

i) MLA R_0, R_1, R_2, R_3

ii) MVN R_2, R_3, ASR # 2

iii) STR R_0, [R_1,# 4]

iv) ANDS r_0, r_1, r_2

Q3) a) Explain the architecture of LPC 2148 with a neat block diagram. **[8]**

b) Compare I_2C & SPI protocol. **[2]**

OR

P.T.O.

Q4) a) Enlist the features of on-chip ADC in LPC 2148. Explain ADOGDR register. **[6]**

b) Draw and explain the interfacing diagram of SD card with LPC 2148. **[4]**

Q5) a) Compare cortex - A, cortex - R, cortex - M series processor. **[8]**

b) Enlist need and desired features of operating system in developing complex applications in embedded system. **[8]**

OR

Q6) a) Draw and explain CMSIS standard for firmware development in ARM cortex based system. **[6]**

b) Discuss various cortex M3 based controllers. **[4]**

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

Q7) a) Draw & explain architecture of LPC 1768. **[10]**

b) Explain four reset sources under system control block of LPC 1768 in detail. **[8]**

OR

Q8) a) Draw interfacing diagram of motor control using PWM with LPC 1768 & write down the algorithm to control the speed of the motor. **[8]**

b) Explain three clock sources (oscillators) for LPC 1768. **[6]**

c) Describe any two registers with reference to LPC 1768. **[4]**

i) FIOMASK

ii) FIOPIN

iii) FIOSET

iv) FIODIR

Q9) a) Explain CAN protocol and frame structure with reference to AMR M3 (LPC 1768). **[8]**

b) Explain the architecture & operation of Ethernet bus with reference to ARM CORTEX M3 (LPC 1768). **[8]**

OR

Q10)a) With respect to USB controller in LPC 1768 explain. **[8]**

i) Features to USB 2.0

ii) Frame structure

b) How in & out data transactions take place in USB? Give operational overview. **[8]**