

Total No. of Questions :10]

SEAT No. :

P1733

[Total No. of Pages :3

[5058] - 367

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 I₂C & 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]

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