Total No. of Questions : 10]

SEAT No. :

P2384

[Total No. of Pages :3

[4758] - 542
T.E. (E & TC)
EMBEDDED PROCESSORS
(2012 Pattern) (End-Sem.) (Semester -II) (304191)

Time :3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
4) ***Assume suitable data, if necessary.***

Q1) a) What is the function of Barrel shifter in ARM data flow model. **[2]**

b) What is the significance of special purpose registers r_{13}, r_{14} and r_{15}. **[3]**

c) Compare ARM 7, ARM 9, ARM 11. **[5]**

OR

Q2) a) Write a program for on chip ADC for LPC 2148. **[6]**

b) List the features of UARTO? Compare it with UAR 11. **[4]**

Q3) a) Draw and explain interfacing diagram of I2C EEPROM to LPC 2148. **[4]**

b) Draw and explain block diagram of LPC 2148. **[6]**

OR

Q4) a) Draw and explain CPSR register structure of LPC 2148. **[4]**

b) Explain the following instructions with example. **[6]**

i) SWP R_0, R_1

ii) MUL R_1, R_2, R_3

iii) LDR R_2, [R_3]!

P.T.O.

Q5) a) Draw and explain CMSIS structure of cortex series. **[8]**

b) Draw and explain interfacing diagram of 7 segment display with LPC1768. Draw flow chart. **[8]**

OR

Q6) a) Compare ARM7 with CORTEX M series. **[4]**

b) What is need of operating system in ES? Explain desired features of OS for complex embedded system design. **[6]**

c) Draw & explain with algorithm interfacing diagram for RGB LEDs with LPC 1768. **[6]**

Q7) a) What is PWM? Write a embedded C program to drive DC motor using PWM for LPC 1768. **[8]**

b) Explain the role of following registers in LPC 1768. **[8]**

i) Direction registers

ii) SET Registers

iii) Clear Registers

iv) Mask registers

OR

Q8) a) Draw and explain block diagram of LPC 1768 in detail. **[8]**

b) Draw and explain power control block of LPC 1768 and explain various power saving modes. **[8]**

Q9) a) Draw and explain clock control block of LPC 1768 in details. **[9]**

b) Explain the following blocks of LPC 1768. **[9]**

i) NVIC (Nested Vector Interrupt Controller)

ii) MPU (Memory Protection Unit)

OR

Q10) Write short note on **[18]**

a) Ethernet (Features, Frame structures etc)

b) CAN Protocol (Features, Block diag, applications, etc)

c) USB (Features, frame structures, etc)

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