

17/5/16.

Sem-V EXTC (CBGS)

Microcontrollers & Applications

QP Code : 31103

(3 Hours)

[Total Marks : 80]

N.B : (1) Question No. 1 is compulsory.

- (2) Solve any **three** questions out of remaining questions.
- (3) **Figures** to the **right** indicate **full marks**.
- (4) Assume suitable **data** where **necessary**.
1. (a) Explain Concept of Cortex-A, the Cortex-R, and the Cortex-M. 5
- (b) Compare AJMP, SJMP and LJMP instructions of 8051 5
- (c) What is Stack? How it is implemented in 8051? 5
- (d) Which are the basic features adopted from RISC architecture to enhance the performance of ARM architecture? Explain in short two of them. 5
2. (a) Explain exceptions and interrupt handling in ARM 7. 10
- (b) Explain PORT I structure of 8051. 10
3. (a) Write an Assembly language program for 8051 to copy a block of data 10 bytes long from RAM locations starting at 35H to RAM locations starting at 60H. 10
- (b) Interface HEX keypad and seven segment display to 8051 and write assembly language program to display the key pressed on the display. 10
4. (a) Write a assembly language program to generate a rectangular waveform of frequency 1 KHz and 70% duty cycle at pin P1.1 using 8051. Assume 8051 is operating at frequency 12 MHz. 10
- (b) What is pipeline concept of ARM 7 architecture, explains it with proper block diagram. How it affects the system performance? 10

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5. (a) What are the challenges in optimizing embedded system design matrices ? 5
- (b) Explain IR based wireless communication system design. 5
- (c) Explain addressing modes of ARM 7. 10
6. (a) Explain interrupt structure of 8051 10
- (b) Write assembly language program for 8051 to transfer message "WELCOME" serially at baud rate of 9600 in mode 1. Assume that 8051 operates at frequency 11.0592 MHz. 10
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