1652

Code : 15EC52T

Register Number | | | | | | | |

V Semester Diploma Examination, Nov./Dec. 2017

ARM CONTROLLER

Time : 3 Hours | **| Max. Marks : 100**

Note : (1) Answer any **six** questions from Part – **A**. (6 × 5 = 30 Marks)

(2) Answer any **seven** full questions from Part – **B**. (7 × 10 = 70 Marks)

PART – A

1. List the applications of ARM processor. **5**

2. Explain Barrel shifter with a neat sketch. **5**

3. Describe the following directives : **5**

   EQU, SPACE, ALIGN, DCD, DCW

4. Explain ARM-THUMB networking using BLX instruction. **5**

5. Write code for disabling IRQ and FIQ interrupts. **5**

6. Explain interrupt stack design with a neat sketch. **5**

7. List any five features of RTC. **5**

8. Name any five features of I^2C. **5**

9. Explain the bit structure of PLL STAT register. **5**

PART – B

10. (a) Explain ARM CORE data flow model. 8
    (b) Justify the features that improves code density. 2

11. (a) Explain bit structure of CPSR. 8
    (b) Justify how ARM is suitable for mobile applications. 2

12. (a) Explain MVN, MRS and MSR instruction with example. 6
    (b) Distinguish between post and pre indexed addressing mode with an example. 4

13. (a) Test whether the following instructions are pre or post index addressing mode : 5
    (i) STR R6, [R4, #4]
    (ii) LDR R3, [R12], #6
    (iii) LDRB R4, [R3, R2]
    (iv) LDR R6, [R0, R1, ROR # 6]
    (v) STR R3, [R0, R5, LSL # 3]
    (b) Calculate the effective address of the following instructions if Register R3 = 0 × 4000 & register R4 = 0 × 20. 5
    (i) STRH R9, [R3, R4]
    (ii) LDRB R8, [R3, R4, LSL #3]
    (iii) LDR R7, [R3], R4
    (iv) STRB R6, [R3], R4, ASR #2
    (v) LDR R0, [R3, –R4, LSL #3]

14. (a) Compare ARM and THUMB instructions. 5
    (b) Write an ALP to find largest number in an array. 5

15. (a) Explain non-nested interrupt handler with a neat sketch. 6
    (b) List the interrupt handling schemes. 4

16. Sketch a memory map of LPC 2148. 10

17. (a) Calculate the values of PLL configuration register (PLLCFG) for the following frequency specification CCLK = 60 MHz, PCLK = 15 MHz, FCCO is 156 MHz to 320 MHz, FOSC = 10 MHz. 6
    (b) List any four features of Timer in LPC2148. 4

18. (a) Write C program to interface LEDs to all pins in port 0 (P0.0 to Po.15) make repeatedly blink all LEDs high then low, then high and so on (introduce some delay). 6
    (b) List any four applications of GPIO. 4

19. (a) Sketch a neat block diagram of TIMER. 8
    (b) List the Legacy GPIO registers. 2