Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **17EI3023** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED PROCESSOR FOR CONTROL AND AUTOMATION** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
|  |  | Examine the following for 8051 Microcontroller. |  |  |
| 1. | a. | List out the on-chip peripherals. | CO1 | 4 |
| b. | Memory organization of internal ROM and RAM. | CO1 | 8 |
| c. | Design of reset circuit. | CO1 | 8 |
| (OR) | | | | |
| 2. | a. | Experiment the interfacing of temperature sensor to 8051 Microcontroller using ADC0808 IC. | CO3 | 10 |
|  | b. | List the timer mode operations. Identify the mode to generate 50ms time delay, assume the crystal frequency is 12MHz. | CO1 | 10 |
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| 3. | a. | Indicate the function of Data Direction Register (DDR). Write an AVR C program to toggle all the pins of Port B continuously. | CO1 | 10 |
|  | b. | Interface 4 Led’s and 1 Switch with AVR controller and write a program to demonstrate up/down counter with mod control. | CO3 | 10 |
| (OR) | | | | |
| 4. | a. | List the various sources of AVR interrupts and priorities. Explain the steps in enabling an interrupt and also discuss the external interrupts in detail. | CO1 | 10 |
|  | b. | Write a program to generate time delay of 10ms using timer1 in normal mode. Choose prescaler of 1024. Exclude the instruction overhead due to the instructions in loop. Assume XTAL = 8MHz. | CO1 | 10 |
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| 5. | a. | Illustrate the functional block diagram of ARM7-TDMIS processor. | CO1 | 10 |
|  | b. | Write an ARM assembly language program to perform the following sequence.  X = 1\*2 + 2\*3 + 3\*4 + …………… + (N-1) \* N | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Explain the programmers model and operating modes of an ARM7 processor. | CO1 | 10 |
|  | b. | Assume Register R3 contains 0x8000. What would the register contain after executing the following Instructions.   1. STR R6, [R3, #12] 2. STRB R7, [R3], #4 3. LDRH R5, [R3], #8 4. LDR R12, [R3, #12]! | CO1 | 10 |
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| 7. | a. | Outline the pin configuration of Raspberry Pi B+ module. | CO3 | 10 |
| b. | Experiment the configuration of an I/O pins using python programming. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | With the neat sketch, explain the functional block diagram of blackfin processor. | CO1 | 10 |
| b. | Identify the linux commands which involved in setting the working environment for Raspberry Pi module. | CO2 | 10 |
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|  | | **Compulsory:** |  |  |
|  | | Summarize the following embedded system concepts. |  |  |
| 9. | a. | On-board diagnostics in automobile applications. | CO2 | 10 |
|  | b. | Real – Time debugging using JTAG ROM Emulator. | CO2 | 10 |

ALL THE BEST