Exam.Code:0929
Sub. Code: 33669

2125

B.E. (Electronics and Communication Engineering)
Fifth Semester
EC-506: Advanced Microcontrollers and Applications

Time allowed: 3 Hours | Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Explain the following:-

a) Flash Memory Organization

b) ISP and SIPO

c) Characteristic of real time operating system

d) Microcontroller used in Arduino Uno is _____ and has operates on_____ clock frequency.

e) Difference between RET and RTI instruction. (5x2)

UNIT - I

II. In AVR instructions are 16- or 32-bits wide, the Flash is organized as 4K x 16 bits. For software security, how the Flash Program memory space is divided, detail the Boot Program section and Application Program section? (10)

III. Assuming that XTAL = 8 MHZ and we are generating the square wave at PB2, find the highest square wave frequency that we can generate using timer 1 in normal mode. Also write a code for event counter using timer 1. (10)

IV. Which ports of ATmega 32 are bit addressable? What are the advantages of bit addressability for AVR ports? The Register file is optimized for the AVR Enhanced RISC instruction set enlighten in details along with special function registers.. (10)

UNIT - II

V. Justify the usage of Arduino as open source hardware. (10)

VI. Interface and program 16x2 LCD with Arduino Uno board to display "ECE DEPT." on it. (10)

VII. Explain the functional block diagram of accelerometer-based gesture control robot using Arduino board. (10)

x-x-x