BRAINWARE UNIVERSITY

Term End Examination 2022
Programme – M.Tech.-RA-2022
Course Name – Embedded System Application for Robotics
Course Code - PEC-MIRA101B
(Semester I)

Full Marks : 60   **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1. *Choose the correct alternative from the following :*

(i)   The inverter can be produced with how many NAND gates?

   a) 1   b) 2
   c) 3   d) 4

(ii)   The NOR gate is OR gate followed by _____.

   a) AND   b) NOT
   c) NAND   d) None of these

(iii)   In Boolean algebra, the OR operation is performed by which properties

   a) Associative properties   b) Commutative properties
   c) Distributive properties   d) All of these

(iv)   The largest two digit hexadecimal number is

   a) (FE)16   b) (FD)16
   c) (FF)16   d) (EF)16

(v)   The decimal number 10 is represented in its BCD form as

   a) 10100000   b) 1010111
   c) 10000   d) 101011

(vi)   Which of the following is method to model a diode's forward characteristics?

   a) Iteration method   b) Graphical method
   c) Constant-voltage drop model   d) All of these

(vii)   What is the maximum delay that can be generated with the crystal frequency of 22MHz

   a) 2978.9 sec   b) 0.011 msec
   c) 11.63 sec   d) 2.97 msec

(viii)   It retains its content when power is removed. What type of memory is this

   a) Volatile memory   b) Nonvolatile memory
   c) RAM   d) SRAM

(ix) The initial routine is often referred to as

    a) Initial program   b) Bootstrap program
    c) Final program   d) Initial embedded program

(x) A microcontroller at-least should consist of:

    a) RAM, ROM, I/O devices, serial and parallel ports and timers   b) CPU, RAM, I/O devices, serial and parallel ports and timers
    c) CPU, RAM, ROM, I/O devices, serial and parallel ports and timers   d) CPU, ROM, I/O devices and timers

(xi) Unlike microprocessors, microcontrollers make use of batteries because they have:

    a) high power dissipation   b) low power consumption
    c) low voltage consumption   d) low current consumption

(xii) What is the order decided by a processor or the CPU of a controller to execute an instruction?

    a) adecode,fetch,execute   b) execute,fetch,decode
    c) fetch,execute,decode   d) fetch,decode,execute

(xiii) Which architecture provides separate buses for program and data memory?

    a) Harvard architecture   b) Von Neumann architecture
    c) None of the mentioned   d) All of the mentioned

(xiv) Value of temaparature coefficient of Strain gauge is

    a) low   b) High
    c) zero   d) infinite

(xv) Strain gauge works on the principle of

    a) piezo-electric effect   b) piezo- resistive effect
    c) barkhausen criterion   d) feedback element effect

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Anticipate the difference between microprocessor and microcomputer.   (3)
3. Examine the various type of A/D converter.   (3)
4. Interpret some of the assembler system.   (3)
5. Analyze the ARM architectures.   (3)
6. Describe the Software Development.   (3)

OR

    Express the salient feature of JTAG.   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Examine Serial and parallel data Communication interfacing.   (5)
8. Explain Programmable Peripheral Interfacing.   (5)
9. Discriminate Interfacing of drivers for DC, Servo and Stepper Motor.   (5)
10. Analyze embedded computing platforms.   (5)
11. Evaluate different types of scheduling algorithm.   (5)
12. Describe Timer and Counters of Microcontroller.   (5)

OR

    Describe 8051 Microcontroller and its families.   (5)

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