17323

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Tech.(RA)-2022/B.Tech.(RA)-2023
Course Name – Embedded System for Robotics
Course Code - PCC-ECR502
(Semester V)

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) 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

(ii) Choose the RISC & CISC meaning.

a) Complete Instruction Set Computer, Reduced Instruction Set Computer
b) Complex Instruction Set Computer, Reduced Instruction Set Computer
c) Complex Instruction Set Computer, Reliable Instruction Set Computer
d) Complete Instruction Set Computer, Reliable Instruction Set Computer

(iii) Harvard architecture allows:

a) a. separate program and data memory
b) b. pipe-ling
c) c. complex architecture
d) d. all of the mentioned

(iv) Select 8051 has how many pins.

a) 50
b) 60
c) 40
d) 80

(v) Identify the steps are followed when we need to turn on any timer.

a) load the count, start the timer, keep monitoring it, stop the timer
b) load the TMOD register, load the count, start the timer, keep monitoring it, stop the timer
c) load the TMOD register, start the timer, load the count, keep monitoring it, stop the timer
d) none of the mentioned

(vi) Name a volatile memory.

a) RAM
b) EPROM
c) ROM
d) EEPROM

(vii) Establish which type of memory is suitable for low-volume production of embedded systems.

a) ROM b) Volatile
c) Non-volatile d) RAM

(viii) Select what type of memory is suitable for high-volume production.

a) RAM b) ROM
c) EPROM d) EEPROM

(ix) Choose which are the two modes of 80286.

a) Real mode and protected mode b) Mode1 and mode2
c) Alternate and main d) Mode A and mode

(x) Choose which are the 4 segmented registers in intel 80286.

a) AX,BX,CX,DX b) AS,BS,CS,DS
c) SP,DI,SI,BP d) IP,FL,SI,DI

(xi) Select which of the following has a Harvard architecture.

a) EDSAC b) SSEM
c) PIC d) CSIRAC

(xii) Identify which of the following is a common cache.

a) DIMM b) SIMM
c) TLB d) Cache

(xiii) Choose what the size of the cache is for an 8086 processor.

a) 64 Kb b) 128 Kb
c) 32 Kb d) 16 Kb

(xiv) Identify which is the most basic non-volatile memory.

a) Flash memory b) PROM
c) EPROM d) ROM

(xv) Identify what is the purpose of the address bus.

a) to provide data to and from the chip b) to select a specified chip
c) to select a location within the memory chip d) to select a read/write cycle

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define embedded system. (3)

3. Explain analog interfacing in embedded systems. (3)
4. Implement signal conditioning in embedded systems. (3)
5. Design user interfaces for embedded systems using various approaches. (3)
6. Evaluate the design tradeoffs in embedded systems resulting from thermal considerations. (3)

OR

Explain process compatibility in embedded systems and the associated design tradeoffs. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe the salient feature of 8051. (5)
8. Explain RAM and processors. (5)
9. Analyze the ARM architectures. (5)
10. Analyze microprocessors and their applications. (5)
11. Describe Timer and Counters of Microcontroller. (5)
12. Write the system on chip (SOC) with an example. (5)

OR

Write short note on interfacing between analog and digital block in embedded system. (5)