

Enrollment No.....



Faculty of Engineering
End Sem Examination Dec-2023
RA3CO35 Embedded Systems

Programme: B.Tech.

Branch/Specialisation: RA

Duration: 3 Hrs.**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. Arduino IDE consists of 2 functions. What are they? **1**
 (a) Loop() and build() and setup()
 (b) Build() and loop()
 (c) Setup() and build()
 (d) Setup() and loop()
- ii. What is Arduino? **1**
 (a) Programming language (b) Image editing software
 (c) Open-source electronics platform (d) Text editor
- iii. What language is a typical Arduino code based on? **1**
 (a) Assembly Code (b) Python
 (c) Java (d) C/C++
- iv. What is the correct execution process of an Arduino code? **1**
 (a) Editor->Preprocessor->Compiler
 (b) Preprocessor->Editor->Compiler
 (c) Compiler->Preprocessor->Editor
 (d) Editor->Compiler->Preprocessor
- v. A 7-segment display comprises of _____ number of segments. **1**
 (a) 2 (b) 4 (c) 8 (d) 9
- vi. What is the clock source for the timers? **1**
 (a) Some external crystal applied to the micro-controller for executing the timer
 (b) From the crystal applied to the micro-controller
 (c) Through the software
 (d) Through programming

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- vii. How many IP addresses can be assigned to hosts, for Subnet Mask 255.255.255.0? **1**
 (a) 255 (b) 22 (c) 254 (d) 1
- viii. Two or more computers connected together over a wide geographical area (e.g. county, country, globe). What type of network is this? **1**
 (a) LAN (b) WAN (c) School network (d) Internet
- ix. Which of the following is a type of cloud computing service? **1**
 (a) Service-as-a-Software (SaaS)
 (b) Software-and-a-Server (SaaS)
 (c) Software-as-a-Service (SaaS)
 (d) Software-as-a-Server (SaaS)
- x. What is Cloud Computing? **1**
 (a) Cloud Computing means providing services like storage, servers, database, networking, etc
 (b) Cloud Computing means storing data in a database
 (c) Cloud Computing is a tool used to create an application
 (d) None of these
- Q.2 i. What is interrupts in microcontroller? **2**
 ii. Write down any six differences between microcontroller and microprocessor. **3**
 iii. Draw and explain the architecture of AVR microcontroller. **5**
- OR iv. Draw the Pin diagram of Arduino and explain the pin functions. **5**
- Q.3 i. What is embedded system? **2**
 ii. Write down any six differences between C and assembly language. **3**
 iii. Draw and explain the interfacing of microcontroller with D.C. motor. **5**
- OR iv. Write an interfacing program for embedded system of IR sensor. **5**
- Q.4 i. Explain the timer and delay function. **4**
 ii. Draw and explain the Analog out (PWM) programming using RGBLED interfacing. **6**
- OR iii. Draw the microcontroller interfacing with seven segment display and explain it. **6**
- Q.5 i. Write any four differences of LAN, WAN, MAN. **4**
 ii. Explain different IPV6 Classes **6**
- OR iii. Explain the IoT for robotics and automation. **6**

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- Q.6 Attempt any two: **5**
 i. Draw the architecture of cloud and explain it. **5**
 ii. Explain the MQTT and HTTP protocol. **5**
 iii. Explain the MySQL and PHP. **5**

Marking Scheme

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Q.1	i)	d	1
	ii)	c	1
	iii)	d	1
	iv)	a	1
	v)	c	1
	vi)	b	1
	vii)	c	1
	viii)	b	1
	ix)	c	1
	x)	a	1
Q.2	i.	What is interrupts in microcontroller?	2
	ii.	Write down difference between microcontroller and microprocessor. (any6) each have 0.1 marks	3
	iii.	Draw the architecture of AVR microcontroller. 2M explain the architecture of AVR microcontroller.3M	5
	OR iv.	Draw the Pin diagram of Arduino 2M the Pin diagram of Arduino and explain the pin functions. 3M	5
Q.3	i.	What is embedded system?	2
	ii.	Write down the difference between C and assembly language.(any3) 1 each	3
	iii.	Draw interfacing microcontroller with D.C. motor. 2M explain interfacing microcontroller with D.C. motor. 3M	5
	OR iv.	Write an interfacing program for embedded system of IR sensor.	5
Q.4	i.	Explain the timer and delay function.	2
	ii.	Draw the Analog out (PWM) programming using RGBLED interfacing. 3M explain the Analog out (PWM) programming using RGBLED interfacing. 3M	6
	OR iii.	Draw the microcontroller interfacing with 7 segment display and explain it.	6

Q.5	i.	Write difference on LAN, WAN ,MAN.(any 4)	4
	ii.	Explain different IPV6 Classes	6
OR	iii.	Explain the IoT for robotics. 3M	6
		Explain the IoT for automation. 3M	
Q.6	i.	Draw the architecture of cloud and explain it.	5
	ii.	Explain the MQTT and HTTP protocol.	5
	iii.	Explain the MySQL and PHP.	5
