PAPER ID-311123

## Subject Code: KOT052

Roll No:

## BTECH

(SEM V) THEORY EXAMINATION 2023-24

## PROGRAMMING AND INTERFACING WITH MICROCONTROLLERS

## TIME: 3 HRS

**M.MARKS: 100** 

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

1.	Attempt <i>all</i> questions in brief.	2 x 10 =	= 20
Qno.	Question	Marks	СО
a.	Enlist the challenges for open platform.	2	1
b.	Compare the Arduino and raspberry Pi platform.	2	1
c.	What are the type of ADC.	2	2
d.	What are the difference between C and C++?	2	2
e.	Draw the block diagram of sensor.	2	3
f.	Explain the features of SPI.	2	3
g.	Define the term SqlLite, MySQL.	2	4
h.	What are the different types of open frame work.	2	4
i.	What is UART?	2	5
j.	Define IOT.	2	5

## SECTION B

2.	Attempt any <i>three</i> of the following:	10x3=3	0
a.	Define creative coding and explain its role in the intersection of art and	10	
	technology.	N	V
b.	Discuss the compatibility and limitations of the "Arduino" language in	10	2
	comparison to traditional C/C++ when working with microcontrollers.	5.	
c.	Discuss the concept of Arduino-compatible microcontrollers. What are	10	3
	the benefits of using microcontrollers that are compatible with the		
	Arduino platform?		
d.	Explain the concept of advanced I/O in the context of openFrameworks.	10	4
	How does it enhance the capabilities of creative coding projects?		
e.	Compare and contrast TCP/IP and UDP as communication protocols in	10	5
	the context of IoT. In what scenarios would you choose one over the		
	other for IoT applications?		

## SECTION C

#### Attempt any one part of the following: 3. 10x1 = 10Explain the significance of PIC microcontrollers in creative coding. How 10 1 a. are they used in artistic and interactive projects? electronics principles, including basic circuit theory, Discuss 10 1 b. measurements, and parts identification. How do these concepts contribute to the understanding and implementation of creative coding projects?

## 4. Attempt any *one* part of the following:

10x1 = 10

-		-	-
a.	Discuss the advantages and challenges of using Raspberry Pi in creative	10	2
	coding applications. How does it differ from traditional desktop and		
	laptop environments?		
b.	Discuss the challenges and ethical considerations in creating digital	10	2
	representations of reality. How can these challenges be addressed in the		
	development process?		

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5.	Attempt any one part of the following:	10x1 = 1	0
a.	Discuss the principles of I2C (Inter-Integrated Circuit) communication.	10	3
	What advantages does I2C offer, and in what applications is it		
	commonly used?		
b.	Examine the significance of Serial UART communication in the context	10	3
	of microcontroller-based systems. How is it utilized for data exchange		
	between devices?		

6.	Attempt any <i>one</i> part of the following:	10x1 = 1	0
a.	Explain the challenges and advantages of wired versus wireless	10	4
	networking with Arduino. In what scenarios would you choose one over		
	the other?		
b.		10	4

7.	Attempt any <i>one</i> part of the following:	10x1=10
a.	Discuss the significance of conducting experiments in the IoT domain.	10 5
	How do experiments contribute to understanding and advancing IoT	N.5
	technologies?	
b.	Explain the process of building a peer-to-peer communication system	10 5
	using Bluetooth. What are the advantages and limitations of Bluetooth in	
	IoT scenarios?	6. <sup>v</sup>
	OR2A AS: ALANT	