KUMARAGURU college of technology
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Register Number:……..…

M.E DEGREE EXAMINATIONS: MAY 2018

(Regulation 2015)

Second Semester

EMBEDDED SYSTEM

P15EST202**:** Embedded Control Systems

COURSE OUTCOMES

CO1: Describe the basics and importance of real-time systems hardware with software.

CO2: Demonstrate the interfacing of I/O Devices and Communication devices.

CO3: Write Embedded C programming for practical implementations of motors and ability to solve the problems in embedded systems.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match the following CO1[K_2]

Memory size	No of address lines required
A. Processor	1. computation
B. Timers	2. Generate delay
C. Ports	3. Transfer / Receive data
D. Memory	4. Stores message

	A	B	C	D
a)	1	2	3	4
b)	2	4	3	1
c)	2	1	4	3
d)	4	2	1	3

2. Assertion (A): Data lines are Bidirectional CO1[K1]

Reason (R) : Since Address Lines are Uni directional

a) A is false but R is true

b) A is true but R is false.

c) Both A and R are correct and R is the correct explanation of A

d) Both A and R are correct and R is the not correct explanation of A

3. Time stamp format of time day of clock is CO1 [K2]

a) 8 - bit b) 32-bit

c) 16-bit d) 31-bit

4. Write the correct sequence of the Timer manager operation. CO1 [K1]

1. If timer times out , stop the operation and notify the operator
2. Monitor for desired condition, if conditions are met stop the timer.
3. start the timer
4. start an operation

a) 1-2-3-4 b) 2-3-1-4

c) 4-3-2-1 d) 1-3-2-4

5. Most common signal conditioning functions are CO1 [K2]

1. Amplification,
2. linearization,
3. cold-junction compensation,
4. filtering,

Which are all the statements are correct?

a) i, ii, iii and iv are correct b) i, iii are correct

c) iii, iv are correct d) ii, iv are correct.

6. IC APR 9301 is used for CO2 [K_2]

a) Store data b) Digital to Analog conversion

c) Recording and playback voice d) Time day of clock

7. Assertion (A): Asynchronous communication Used for connecting printer and low speed Devices. CO2 [K_2]

Reason (R) : Limited data rate < 64 kbps

a) A is false but R is true b) A is true but R is false.

c) Both A and R are correct and R is the correct explanation of A d) Both A and R are correct and R is the not correct explanation of A

8. RS-485 interface is created to allow_____ CO2[K_3]

a) multiple processor to communicate with each other in a common line b) High speed data transmission

c) Wireless data transfer d) Full duplex communication

9. RS232 DB connector has _____pins CO2[K_1]

a) 8 b) 9

c) 10 d) 12

10. To control the direction of rotation of DC motor _____ is used. CO3 [K_3]

a) Starter b) Breaker

c) H-Bridge d) Rheostat

PART B (10 x 2 = 20 Marks)

11.	If an address bus is of size **32 bits** then How much memory it is possible to access?	CO2 [K_3]
12.	What is a port? List any four communication port.	CO2 [K_1]
13.	What is the use of key hit ( ) code?	CO1 [K_2]
14.	What do you mean by keyboard denouncing?	CO1[K_1]
15.	What is Auto port detect?	CO2 [K_1]
16.	List the advantages of R-2R Digital to analog converter.	CO2 [K_1]
17.	List the features of Asynchronous communication.	CO2 [K_1]
18.	How many drivers and receivers RS485 has?	CO2 [K_2]
19.	What is inventory control system?	CO2 [K_1]
20.	How many switches are connected in H-Bridge? Can we close all the switches of H-Bridge simultaneously? Justify?	CO3 [K_1]

PART C (10 x 5 = 50 Marks)

21.	Classify different types of bus and explain about it.	CO2 [K_2]
22.	Draw and Label how the processor and memory is connected by the Address, Data and control bus.	CO2 [K_2]
23.	Draw the structure of 4 digit Multiplexed LED system.	CO2 [K_2]
24.	Write short notes on Timer manager module flow diagram?	CO2 [K_1]
25.	Write short notes on interrupts and its importance?	CO1[K_1]
26.	Write short notes on ADC0809?	CO2 [K_2]
27.	Draw the timing diagram of Asynchronous serial communication.	CO2 [K_2]
28.	List the features of RS-485 interface.	CO2 [K_1]
29.	Write short notes on H- Bridge?	CO3[K_2]
30.	Discuss the importance of Embedded systems in telephonic systems?	CO2 [K_1]

Answer any TWO Questions

PART D (2 x 10 = 20 Marks)

31.	Explain the working principle of washing machine and how the automation is carried out with the controller.	CO3	[K_3]
32.	Write an Embedded C program to control the speed of DC motor using with necessary diagram?	CO3	[K_3]
33	With neat diagram explain the Data acquisition system.	CO2	[K2]

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