

## Sample copy of Assignment



**K. S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**SESSION: 2022-23 (EVEN SEMESTER)**  
**ASSIGNMENT-1**

Batch	2020 - 2024		
Year/Semester/Section	III / VI / -	Department	ECE
Course Code-Title	18EC62-Embedded Systems		
Name of the Instructor	Mr. Dileep J		

Assignment No: 1		Total Marks: 15		
Date of Issue: 06/04/2023		Date of Submission: 17/04/2023		
Sl. No	Assignment Questions	K Level	CO	Marks
1.	a) Make use of Architectural Block diagram of ARM Cortex M3 processor to describe the functions of the various units b) Outline Advantages of Cortex M3 processors	Applying (K3)	CO1	2
2.	a) Organize the functions of R0 to R15 and other special registers in Cortex M3 b) Construct vector table and its priorities and explain functions of exceptions	Applying (K3)	CO1	2
3.	a) Determine the Two stack model of ARM Cortex M3 b) Build the Reset Sequence of ARM Cortex M3	Applying (K3)	CO1	2
4.	a) Make use of state diagrams to explain operation modes and privilege levels of cortex M3 b) Construct memory Map of ARM Cortex M3 processor	Applying (K3)	CO1	2
5.	a) Estimate features of built in nested vector interrupt controller b) Make use of ARM architecture to describe Bus interface and memory protection unit briefly	Applying (K3)	CO1	2
6.	a) Organize applications of ARM Cortex M3 processors b) Evaluate the debugging support of Cortex M3 processors	Applying (K3)	CO2	1
7.	Construct 3 types of program status registers with neat diagram	Applying (K3)	CO2	1
8.	Estimate shift and rotate instructions with example	Applying (K3)	CO2	1
9.	Make use of instruction set of ARM and Explain load and store instructions with example	Applying (K3)	CO2	1
10.	Determine the working of following with example BFC, RBIT, SMULL, REV16, PUSH, POP, SBFX, MRS	Applying (K3)	CO2	1

**Course In charge**

**HOD/ECE**

Professor & He: J  
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**SESSION: 2022-23 (EVEN SEMESTER)**  
**ASSIGNMENT-2**

Batch	2020 - 2024		
Year/Semester/Section	III / VI / -	Department	ECE
Course Code-Title	18EC62-Embedded Systems		
Name of the Instructor	Mr. Dileep J		

Assignment No: 2		Total Marks: 15		
Date of Issue: 28/04/2023		Date of Submission: 08/05/2023		
Sl. No	Assignment Questions	K Level	CO	Marks
1.	a) <b>Make use of</b> neat diagram to explain the organization of CMSIS and its benefits b) <b>Evaluate</b> how CMSIS provides standard access interface for embedded software.	Applying (K3)	CO2	1
2.	<b>Make use of</b> ARM instructions to calculate the sum of 1 to 10 numbers.	Applying (K3)	CO2	1
3.	<b>Design</b> typical developmental flow of ARM programming	Applying (K3)	CO2	1
4.	<b>Make use of</b> ARM instructions to blink LED using 'C' Language.	Applying (K3)	CO2	1
5.	<b>Estimate</b> different types of memories	Applying (K3)	CO2	1
6.	What is an embedded system? <b>Determine</b> the purpose of embedded system with example for each.	Applying (K3)	CO3	2
7.	<b>Build</b> elements of an embedded systems with block diagram	Applying (K3)	CO3	2
8.	a) <b>Build</b> the classification of embedded system b) <b>Construct</b> the application areas of embedded system	Applying (K3)	CO3	2
9.	<b>Develop</b> the differences between i) RISC and CISC ii) Harvard and Princeton Architecture iii) Big Endian and Little Endian Architecture iv) General Purpose Computing System and Embedded Operating System	Applying (K3)	CO3	2
10.	<b>Construct</b> the features of the following I2C Bus, SPI bus, IrDA, Opto-coupler, Zigbee, WiFi, Bluetooth	Applying (K3)	CO3	2

  
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**ASSIGNMENT-3**

Batch	2020 - 2024		
Year/Semester/Section	III / VI / -	Department	ECE
Course Code-Title	18EC62-Embedded Systems		
Name of the Instructor	Mr. Dileep J		

Assignment No: 3		Total Marks: 20		
Date of Issue: 13/06/2023		Date of Submission: 23/06/2023		
Sl. No	Assignment Questions	K Level	CO	Marks
1.	Estimate different characteristics of Embedded system	Applying (K3)	CO4	2
2.	Develop different 'Embedded firmware design' approach in detail	Applying (K3)	CO4	2
3.	a) Design washing machine and explain its working with diagram b) Evaluate different types of serial bus interface used in automotive communication.	Applying (K3)	CO4	2
4.	Build Computational Models in Embedded System	Applying (K3)	CO4	2
5.	Make use of neat diagram to explain how source file to object file transition take place.	Applying (K3)	CO4	2
6.	Build the operating system architecture with its diagram	Applying (K3)	CO5	2
7.	Design a coin operated public telephone unit based on FSM model	Applying (K3)	CO5	2
8.	Construct the classification of operating systems	Applying (K3)	CO5	2
9.	Develop operational, non-operational attributes and Quality attributes of an embedded system	Applying (K3)	CO5	2
10.	Three processes with process IDs P1, P2, P3 with estimated completion time 10, 5, 7 milliseconds respectively enter the ready queue together. A new process P4 with estimated completion time 2ms enters the 'Ready' queue after 2ms. Assume all the processes contain only CPU operation and no I/O operations are involved. Calculate the waiting time and Turn Around Time (TAT) for each process and the average waiting time and Turn Around Time in the SRT scheduling.	Applying (K3)	CO5	2

  
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