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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2025

EMBEDDED SYSTEM AND REAL TIME OPERATING SYSTEM

[Maximum marks: 75] [Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark.

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Define Embedded System.	M1.01	U
2	Define a process.	M4.03	U
3	List any two C data type used in AVR Microcontroller.	M2.01	U
4	List any two registers used in ATMega 32.	M2.01	U
5	Expand ADC and DAC.	M3.02	R
6	State whether the following statement is True or False. UART is an example for Serial Port.	M3.01	U
7	Define Task.	M4.03	U
8	List any two functions of Operating System.	M4.01	U
9	FCFS is one of the Task scheduling algorithm. Is it True or False.	M4.05	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	List the characteristics of an Embedded system.	M1.01	U
2	What do you mean by Task Synchronization?	M4.06	U
3	List the Non functional requirements in selecting a RTOS.	M4.08	U
4	What are the different ways of creating a time delay in AVR?	M2.02	U
5	List the logic operators used in AVR C.	M2.03	U
6	Explain Interrupt vs Polling.	M2.08	U
7	How can we interface a Sensor to AVR?	M3.02	U
8	Explain the use of MAX 232 in AVR microcontroller.	M3.01	U
9	Define Multiprocessing and Multitasking.	M4.04	U
10	List the functional requirements in selecting a RTOS.	M4.08	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Explain the classification of Embedded system based on generation.	M1.01	U
	OR		
IV	Explain the classification of embedded system based on Performance and Complexity.	M1.01	U
V	1. Explain AVR Status Register. (5 Marks)	M1.02	U
	2. Define Data Conversion. (2 Marks)	M1.02	U
	OR		
VI	Distinguish between General Purpose Computer and Embedded System.	M1.01	U
VII	(a) List the arithmetic operators used in AVR C. (3 Marks)	M2.03	U
	(b) Write a AVR C program to get a byte of Data from PORT B and then send it to Port C. (4 Marks)	M2.02	A
	OR		
VIII	Explain the steps in executing an Interrupt.	M2.07	U
IX	Write an AVR C program to get a byte of data from Port B. If it is greater than 5, then send it to PORTC otherwise send it to PORT D.	M2.02	A
	OR		
X	List Different C data types used in AVR C programming.	M2.01	U
XI	Explain ADC Interfacing.	M3.02	U
	OR		
XII	List ATmega32 ADC features.	M3.02	U
XIII	Outline the key features of Task Scheduling algorithms.	M4.05	U
	OR		
XIV	Summarize the features of different types of Operating Systems.	M4.02	U

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