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

EMBEDDED SYSTEMS

[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	Give an example for on-board communication interfaces in embedded system.	M1.06	R
2	……..is an example for sensor used in embedded systems.	M1.05	R
3	Name the 8-bit timers of ATMega32.	M2.04	R
4	List any two AVR family microcontrollers.	M2.01	R
5	The expansion form of I2C is…….	M3.07	R
6	The resolution of ADC in ATMega32 is…….bit.	M3.06	U
7	Name any two RTOS.	M4.05	R
8	………is an operating systems allows a user to perform more than one task at a time. (Multiprogramming/Multiprocessing)	M4.02	R
9	Define kernel of an embedded operating system.	M4.01	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	Describe any two I/O devices used in embedded systems.	M1.05	R
2	Define embedded systems based on complexity and performance.	M1.02	R
3	List any six applications of embedded systems.	M1.01	R
4	Explain the data types in AVR C.	M2.05	U
5	Explain any four features of ATMega32.	M2.02	U
6	Explain the working of Optocoupler.	M3.02	U
7	Explain SPI interfacing.	M3.08	U
8	Draw the diagram of interfacing 7-segment display with ATMega32.	M3.03	U

9	Explain task communication in embedded systems.	M4.02	R
10	List task scheduling in embedded systems.	M4.02	R

PART C
Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Describe the architecture of an embedded system with a simple block diagram.	M1.03	R
	OR		
IV	Explain different types of memories used in an embedded system.	M1.05	R
V	Draw and explain the block diagram of AVR.	M2.02	U
	OR		
VI	Explain the Interrupts of ATMega32.	M2.07	U
VII	Develop AVR C program to display the status of a PORTC pin 2 in a LED connected to PORTB pin 0	M2.06	A
	OR		
VIII	Develop an AVR C program to convert packet BCD 0x29 to ASCII and display the bytes on PORTB and PORTC.	M2.05	A
IX	Explain the interfacing of stepper motor with ATMega32.	M3.05	U
	OR		
X	Explain Matrix keyboard interfacing with AVR.	M3.04	U
XI	Develop an AVR C program to interfacing of DC motor with ATMega32.	M3.05	A
	OR		
XII	Develop an AVR C program to read the status of a push button switch connected to PORTC and display the status by turning ON/OFF a bulb connected to PORTB using relay.	M3.02	A
XIII	Outline the Micro C/OS-II services.	M4.04	U
	OR		
XIV	List the selection criteria for an embedded OS.	M4.03	U

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