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MINOR
(SEM VI) THEORY EXAMINATION 2024-25
MICROPROCESSOR & EMBEDDED SYSTEMS

TIME: 3 HRS**M.MARKS: 100****Note:** Attempt all Sections. In case of any missing data; choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 10 = 20**

Q No.	Question	CO	Level
a.	Define Embedded system	1	K1
b.	What is the importance of microcontrollers in embedded applications?	1	K2
c.	What do you mean by physical memory organization in 8086?	2	K1
d.	What do you mean by pipelining?	2	K1
e.	What do you understand by DMA controller?	3	K1
f.	Write the programming techniques used in microprocessor.	3	K2
g.	What is the function of a motor driver in microcontroller-based systems?	4	K1
h.	Which is the most widely used registers of 8051 microcontroller?	4	K2
i.	What do you mean by assembly language programming?	5	K1
j.	Define the term PIC and ARM processors.	5	K1

SECTION B**2. Attempt any three of the following:****10 x 3 = 30**

Q No.	Question	CO	Level
a.	Draw the block diagram of an embedded system and explain its components.	1	K3
b.	Explain the internal architecture and modes of operation of the 8086 microprocessor.	2	K2
c.	Explain SPI protocol and its application in embedded systems.	3	K2
d.	Explain the IO/M write operation with the help of timing diagrams.	4	K3
e.	Discuss in detail about the Universal Asynchronous Receiver/ Transmitter (UART).	5	K2

SECTION C**3. Attempt any one part of the following:****10 x 1 = 10**

Q No.	Question	CO	Level
a.	What is the role of RAM and ROM in Embedded System?	1	K2
b.	Explain the product Life-Cycle curve of an Embedded product development.	1	K2

4. Attempt any one part of the following:**10 x 1 = 10**

Q No.	Question	CO	Level
a.	Draw the register organization of 8086.	2	K3
b.	Explain minimum and maximum operating modes of 8086 with timing diagram.	2	K3



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5. Attempt any *one* part of the following:

10 x 1 = 10

Q No.	Question	CO	Level
a.	Give the features and functional block diagram of 8257 DMA controller.	3	K3
b.	Draw and explain internal architecture of 8255 parallel I/O peripheral device. Also describe the bit of control word.	3	K3

6. Attempt any *one* part of the following:

10 x 1 = 10

Q No.	Question	CO	Level
a.	Design a system to display the speed of a DC motor on an LCD screen using a microcontroller. Explain the interfacing of both the motor and display with timing and control logic.	4	K3
b.	Explain the architecture of an ARM Cortex-M processor. What are its key features and advantages in embedded systems?	4	K2

7. Attempt any *one* part of the following:

10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain the process of analog data acquisition using ADC. Write a C program to read ADC values and display them on a serial monitor.	5	K2
b.	Discuss the working of a servo motor and explain how PWM is used to control its position using a microcontroller.	5	K2

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