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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech (Working Professional)

SEM: II - THEORY EXAMINATION (2024- 2025)

Subject: Microprocessor and Microcontroller

Time: 2 Hours

Max. Marks: 50

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

15

1. Attempt all parts:-

- 1-a. What is a microprocessor? (CO1,K2) 1
- (a) A device to display output
 - (b) A memory chip
 - (c) A programmable integrated circuit that performs arithmetic and logic operations
 - (d) A permanent storage unit
- 1-b. BIU stands for: (CO2,K2) 1
- (a) Binary Interface Unit
 - (b) Bus Internal Unit
 - (c) Bus Interface Unit
 - (d) Bit Instruction Unit
- 1-c. The 8051 has how many I/O ports? (CO3,K3) 1
- (a) 2
 - (b) 3
 - (c) 4
 - (d) 5
- 1-d. Which of the following companies designs ARM processors? (CO4,K4) 1
- (a) ARM Holdings
 - (b) Intel
 - (c) AMD

(d) NVIDIA

1-e. Which of the following ARM processors first introduced the Thumb instruction set? (CO5,K4) 1

(a) ARM1

(b) ARM7TDMI

(c) ARM11

(d) Cortex-M0

2. Attempt all parts:-

2.a. Which microprocessor marked the beginning of 16-bit processing? (CO1,K2) 2

2.b. What is the role of the Stack Pointer (SP) in 8086? (CO2,K2) 2

2.c. What is the use of ALE pin? (CO3,K3) 2

2.d. What is Cortex R processor? (CO4,K4) 2

2.e. Why was the Thumb instruction set introduced in ARM processors? (CO5,K4) 2

SECTION-B 15

3. Answer any three of the following:-

3.a. What is the Harvard architecture? How does it overcome the limitations of the Von Neumann architecture? (CO1,K2) 5

3.b. Explain the architecture of the 8086 microprocessor with a neat block diagram.(CO2,K5) 5

3.c. Differentiate between general purpose and special function registers of 8051 microcontroller. (CO3,K3) 5

3.d. Explain the detailed pipeline process of Cortex M0 processor with help of diagram. (CO4,K4) 5

3.e. Define Sleep modes.What is the purpose of sleep modes in ARM processors? (CO5,K4) 5

SECTION-C 20

4. Answer any one of the following:-

4-a. Explain the major features and limitations of first-generation microprocessors. (CO1,K2) 4

4-b. Explain Von Neumann architecture with a neat labeled diagram. (CO1,K2) 4

5. Answer any one of the following:-

5-a. Explain the use of general-purpose registers in 8086. (CO2,K2) 4

5-b. What are the advantages and limitations of pipelining in 8086? (CO2,K2) 4

6. Answer any one of the following:-

6-a. Differentiate between Register indirect addressing mode and register addressing mode. (CO3,K3) 4

6-b. Explain the difference between Carry and Auxillary Carry flag with help of example. (CO3,K3) 4

7. Answer any one of the following:-

7-a. Describe the various Cortex M processors in detail. (CO4,K4) 4

7-b. What is Cortex M0 processor? Explain in detail. (CO4,K4) 4

8. Answer any one of the following:-

8-a. Discuss the limitations of the Cortex-M0 instruction set in terms of instruction size, addressing modes, and conditional execution.(CO5,K4) 4

8-b. Discuss the advantages of using the Thumb instruction set in embedded systems. (CO5,K4) 4

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