

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (2024- 2025

Subject: Microprocessor and Microcontroller

Time: 3 Hours

Max. Marks: 100

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

20

1. Attempt all parts:-

1-a. What is a "register"? (CO1, K1)

1

- (a) Digital circuit
- (b) Combinational circuit
- (c) Arithmetic circuit
- (d) Sequential circuit

1-b. To reduce the memory access time we generally make use of _____. (CO1, K2)

1

- (a) SDRAM's
- (b) Heaps
- (c) Cache's
- (d) Higher capacity RAM's

1-c. What does the last instruction of each subroutine that transfer the control to the instruction in the calling program with temporary address storage, called? (CO2, K1)

1

- (a) jump to subroutine
- (b) branch to subroutine
- (c) return from subroutine
- (d) call subroutine

1-d. _____ flag represents the result when the system capacity is exceeded?

1

(CO2, K1)

- (a) Sign
- (b) Parity
- (c) Zero
- (d) Overflow

1-e. Microcontrollers often have _____. (CO3, K1) 1

- (a) CPUs
- (b) RAM
- (c) ROM
- (d) all the above

1-f. The total external data memory that can be interfaced to the 8051 is _____. (CO3, K2) 1

- (a) 32K
- (b) 64K
- (c) 128K
- (d) 256K

1-g. Which one of the following executes all instructions in one cycle? (CO4, K1) 1

- (a) ARM
- (b) 8051
- (c) Both
- (d) None of the above

1-h. What is the full form of APSR? (CO4, K1) 1

- (a) Application Program Status Register
- (b) ARM Program Status Register
- (c) Advanced Program Status Register
- (d) None of the above

1-i. What is SVC? (CO5, K1) 1

- (a) Supervisor call
- (b) Set value carry
- (c) Set call
- (d) None of the above

1-j. Which one of the following is NOT 32-bit Thumb instructions supported on the Cortex-M0 processor? (CO5, K1) 1

- (a) ISB
- (b) DMB
- (c) BKPT
- (d) MSR

2. Attempt all parts:-

2.a.	Differentiate between RAM and ROM. (CO1, K3)	2
2.b.	List the 16 – bit registers of 8085 microprocessor. (CO2, K2)	2
2.c.	Define Baud rate. (CO3, K1)	2
2.d.	What do you mean by power efficient designs with respect to ARM processors? (CO4, K1)	2
2.e.	How many memory access instruction used in Cortex-M0? (CO5, K1)	2

SECTION-B

30

3. Answer any five of the following:-

3-a.	What do you mean by interfacing? Discuss the various logic devices used in interfacing circuits. (CO1, K3)	6
3-b.	Write short note on: a. First Generation Microprocessor b. Second Generation Microprocessor c. Third Generation Microprocessor (CO1, K1)	6
3-c.	List the major features of 8085 microprocessor. (CO2, K2)	6
3-d.	Draw and explain the timing diagram of opcode fetch cycle. (CO2, K3)	6
3.e.	Explain the different jump instructions in 8051. (CO3, K2)	6
3.f.	Explain the architecture of ARM Cortex M0 microprocessor with a neat diagram. (CO4, K2)	6
3.g.	Discuss about the term endianness and its types. Which endianness is followed by ARM Cortex M0 processor? (CO5, K3)	6

SECTION-C

50

4. Answer any one of the following:-

4-a.	Explain the difference between each of the following: (CO1, K2) i. Von Neumann & Harvard Architecture ii. RISC and CISC Architecture	10
4-b.	Describe the concept of memory hierarchy based on size, cost and speed. (CO1, K2)	10

5. Answer any one of the following:-

5-a.	Explain 8085 addressing modes with suitable examples. (CO2, K2)	10
5-b.	Explain the Branch, Stack & I/O instructions of 8085 μ with an example. (CO2, K2)	10

6. Answer any one of the following:-

6-a.	Discuss about the organization of internal RAM and special function registers of 8051 microcontroller in detail. (CO3, K2)	10
6-b.	Explain various 8051 data types and directives. (CO3, K1)	10

7. Answer any one of the following:-

7-a.	Explain the ARM processor families along with their features.(CO4, K2)	10
7-b.	Why interrupts are necessary for a microprocessor? Illustrate it's classification	10

with examples. (CO4, K2)

8. Answer any one of the following:-

- | | | |
|------|--|----|
| 8-a. | Discuss the instruction set available in ARM processor with example. (CO5, K2) | 10 |
| 8-b. | Mention the instructions used for sleep mode feature-related with suitable examples. (CO5, K2) | 10 |

COP:JULY_DEC-2024