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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S5 (R,S) (FT/WP/S3 PT) Examination November 2025 (2019 Scheme)

Course Code: EET303

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Max. Marks: 100

Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks)

		Marks
1	Explain the function of following pins in 8085 microprocessor. i) HOLD ii) SID iii) ALE	3
2	List the different types of 8085 instructions with suitable examples.	3
3	Explain CALL and RET instructions in 8085 microprocessor.	3
4	Write a delay routine using a 8-bit register to produce a time delay of 0.5 ms in 8085 processor-based system whose clock frequency is 3 MHz	3
5	Distinguish between vectored and non-vectored interrupts in 8085 microprocessor.	3
6	Differentiate between microprocessors and microcontrollers.	3
7	Define assembler directives used in 8051 microcontroller with examples.	3
8	Explain the operation of following instructions of 8051 microcontroller i) DA A ii) CPL A iii) SWAP A	3
9	Explain TCON register in 8051 microcontroller.	3
10	Explain Interrupt Priority register of 8051 microcontroller.	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

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|----|--|----|
| 11 | a) Explain the internal architecture of 8085 microprocessor with a neat functional block diagram. | 10 |
| | b) Define machine cycle and T state in 8085 microprocessor. | 4 |
| 12 | a) Sketch and explain the timing diagram of the instruction MVI A,32H with opcode 3EH stored in the memory location 2000H. | 9 |
| | b) Explain five addressing modes of 8085 microprocessor with examples. | 5 |

Module -2

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|----|---|---|
| 13 | a) Write an 8085 ALP to transfer AAH, BBH and CCH respectively stored in consecutive memory locations starting at 2010H to 2050H. | 6 |
|----|---|---|

- b) Explain the stack operation using PUSH B and POP D instruction in 8085 microprocessor with an example. 8
- 14 a) Let register pairs DE and HL of 8085 hold 0102H and 0304H respectively. Illustrate the results of the instructions i) DAD D ii) XCHG iii) SHLD 2550H 6
- b) Write an ALP in 8085 to subtract two eight bit numbers 78H and 5DH stored in memory locations 2050H and 2051H respectively. The results should be stored in 2550H and 2551H. 8

Module -3

- 15 a) List out the applications and challenges in embedded systems. 4
- b) Draw and explain internal architecture of 8051 microcontroller. 10
- 16 a) Explain the interfacing of seven segment LED with 8085 microprocessor. 6
- b) Draw and explain RAM allocation in 8051 microcontroller. 8

Module -4

- 17 a) Explain the different types of jump and bit handling instructions in 8051 microcontroller. 6
- b) Write an 8051 C program to monitor bit P1.5. If it is high, send 55H to P0; otherwise, send AAH to P2. 8
- 18 a) Explain the register indirect and indexed addressing modes in 8051 microcontroller. 6
- b) Write a program to create a 1 kHz square wave of 50% duty cycle on bit 3 of P2. 8

Module -5

- 19 a) Illustrate different modes of operation of timers in 8051 microcontroller. 8
- b) Explain SCON and SBUF registers in 8051 microcontroller. 6
- 20 a) Indicate which mode and which timer are selected for each of the following 6
- i) MOV TMOD, #01H (ii) MOV TMOD, #12H (iii) MOV TMOD, #20H
- b) Draw and explain interfacing of DAC with 8051 microcontroller. 8
