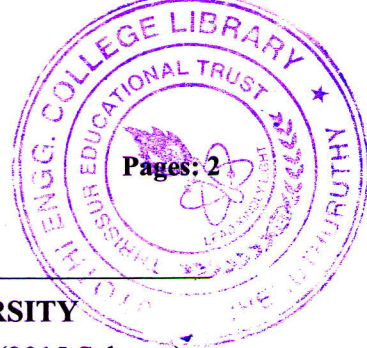


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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
Fifth Semester B.Tech Degree (S,FE) Examination January 2022 (2015 Scheme)

**Course Code: EE309**

**Course Name: MICROPROCESSOR AND EMBEDDED SYSTEMS**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

Marks

- |   |  |     |
|---|--|-----|
| 1 | Explain the operation of following instructions<br>(i)STA 2500 (ii)DAD B (iii)ADD M (iv)RET              | (5) |
| 2 | Sketch the timing diagram of MOV B,C   | (5) |
| 3 | Explain Software and Hardware interrupts in 8085 Microprocessor with example.                            | (5) |
| 4 | Compare Microprocessor and Microcontroller.  | (5) |
| 5 | Discuss the 8-bit PSW register in 8051   | (5) |
| 6 | Explain TMOD register of 8051.   | (5) |
| 7 | Explain the Data types and Directives of 8051 Microcontroller  | (5) |
| 8 | Write an ALP in 8051 to generate a square wave on bit 0 of Port 1 with on and off period of same length. | (5) |

**PART B**

*Answer any two full questions, each carries 10 marks.*

- |    |   |      |
|----|---|------|
| 9  | Explain the architecture of 8085 microprocessor with the help of a neat functional block diagram  | (10) |
| 10 | a) Explain different addressing modes in 8085 with examples   | (6)  |
|    | b) Explain Fetch cycle & Execute cycle in 8085.   | (4)  |
| 11 | a) Analyse the content of stack pointer after the execution of PUSH and POP instructions with an example  | (5)  |
|    | b) Find the count to be loaded in a register pair to obtain a delay of 2500 $\mu$ s. Assume external quartz crystal oscillator clock frequency as 6 MHz | (5)  |

**PART C**

*Answer any two full questions, each carries 10 marks.*

- 12 a) List the field of applications for an embedded system (4)  
b) In a microprocessor 8085 based system requires one 2K x 8 EPROM and 1K x 8 RAM. Write the address range of each memory chip and also draw the interface diagram. Use 3 to 8 decoder (6)
- 13 a) Draw the control word format for the I/O mode of 8255 (6)  
b) Make control word when the ports of Intel 8255 are defined as follows: (4)  
(i) Port A as an input port (ii) Mode of the Port A-Mode 0 (iii) Port B as an output port (iv) Mode of the port B- Mode 0 (v) Port C<sub>upper</sub> as an input port (vi) Port C<sub>lower</sub> as an output port
- 14 With a neat diagram explain water fall model. What are its disadvantages? (10)

**PART D**

*Answer any two full questions, each carries 10 marks.*

- 15 Assume that external crystal frequency (XTAL) =11.0592 MHz. What value do we need to load into the timer's register if we want to have a time delay of 5ms? Show the ALP for Timer 0 to create a pulse width of 5ms on P2.3 (Assume Mode 1 operation and software control for Timer 0) (10)
- 16 Explain with neat diagram the Register organisation and SFR in 8051. (10)
- 17 a) Explain the operation of following instructions (4)  
(i) SWAP A (ii) CPL C (iii) MOV R<sub>n</sub>, #05H (iv) RL A  
b) Draw the TMOD register of 8051. Indicate which mode and which timer are selected for each of the following i) MOV TMOD, #10H ii) MOV TMOD, #02H (6)

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