



**JAI-003-1275004**

Seat No. \_\_\_\_\_

**M. Sc. (ECI) (Sem. V) Examination**

**November - 2019**

**Microprocessor & Microcontroller : Paper - 20**

**Faculty Code : 003**

**Subject Code : 1275004**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

1 Answer the following : (any 7 out of 10) 2×7=14

- (1) What is the largest time delay we can get using Timer0 with prescaler 1:64, Normal mode. XTAL = 8MHz.
- (2) Microprocessor 8085 has \_\_\_\_\_ bit Data bus and \_\_\_\_\_ bit Address bus.
- (3) The Default value of Lower fuse bit is \_\_\_\_\_ and higher fuse bit is \_\_\_\_\_.
- (4) Find the checksum byte for the values 50H, 3AH, CDH and 56H.
- (5) Find the content of ACCUMULATOR after the execution of the following codes.  
MVI C,30H  
MVI A,12H  
INR C  
ADD C
- (6) In the AVR, write assembly language instructions to ADD the values 0×23 and 0×CE and place the result in R<sub>12</sub> register.
- (7) List the different files that are created by assembler for AVR.
- (8) Show the Hex number value used by the following directives.
  - (1) .EQU ASC\_DATA = '5'
  - (2) .EQU MY\_DATA = 0b11000011
- (9) Write the name of different types of AVR.
- (10) State TRUE or FALSE.
  - (1) The I/O registers of AVR are used for storing data.
  - (2) All the instruction in the AVR are 2 or 4 byte instructions.

**2** Answer the following : (any 2 out of 3) **14**

- (1) Describe functional blocks of 8085 microprocessor.
- (2) Draw the PIN diagram of microprocessor 8085.
- (3) Explain the following instructions for AVR.
  - (1) LDI
  - (2) LDS
  - (3) ADD
  - (4) IN
  - (5) MOV
  - (6) STS
  - (7) OUT

**3** Answer the following : **14**

- (1) Find the ROM memory address range and total bytes for each of the following AVR's chip.
  - (1) AVR with 64KB
  - (2) AVR with 16KB
  - (3) AVR with 128KB
- (2) Explain data format representation in AVR in detail with example.

**OR**

- 3**
- (1) Write an AVR C program to send values \$00 to \$FF to PORTS A and B.
  - (2) Write an AVR C program to toggle all bits of PORT C continuously.
    - (A) USE THE INVERTING OPERATOR
    - (B) USE THE EX-OR OPERATOR

4 Answer the following :

14

(1) Find the content of ports after the execution of each of the following codes :

(1) PORT B =  $0 \times 55 \ \& \ 0 \times 99$ ;

(2) PORT B =  $\sim 0 \times F0 \ \wedge \ 0 \times F0$ ;

(3) PORT C =  $0 \times 5A \ | \ 0 \times A5$ ;

(4) PORT A =  $0 \times 3A \ \wedge \ 0 \times B5$ ;

(5) PORT A =  $0 \times 22 \ \wedge \ 0 \times 63$ ;

(6) PORT B =  $0 \times F0 \ | \ 0 \times F5$ ;

(7) PORT C =  $\sim 0 \times AA \ \& \ 0 \times AA$ ;

(2) Explain the following instructions for 8085.

(1) CMA

(2) ANA

(3) RRC

(4) LDA

(5) MOV

(6) STA

(7) ORA

5 Answer the following : (any 2 out of 4)

14

(1) Draw and Explain the data memory space of AVR (without extended memory).

(2) Explain in detail the format of HEX file. Explain the following hex file lines and verify the checksum byte for each line.

:02 0000 02 0000 FC

:0C 0000 00 A0021020002500000011101B 8D

:00 0010 01 FF

(3) Write a note on AVR timer. Explain any one timer of ATmega32 in detail.

(4) What is RISC architecture ? List all of its features.