Marks Scored:

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Level : B.E.
Year : III

Course : EEEG 314
Semester : I

Exam Roll No. :
Registration No. :

Time : 30 mins.

F. M. : 20
Date : 17 FEB 2019

SECTION "A"
[20 Q × 1 = 20 marks]

Encircle the most suitable answer to the following questions:

1) Microprocessor speed depends on _____.
   a) Clock b) Data Bus Width
   c) Address Bus width d) All

2) Start and Stop bits in an asynchronous serial transfer are introduced at the start and end of _____.
   a) Every block of characters b) every character
   c) every bit d) every byte

3) _____ are level triggering interrupts.
   a) INTR & TRAP b) RST 6.5& RST 5.5
   c) RST 7.5& RST 6.5 d) RST

4) The CPU sends out a _____ signal to indicate that valid data is available on data bus.
   a) read b) write c) ALE d) INTR

5) SIM stands for_____.
   a) Select Interrupt Mask b) Set Interrupt Mask
   c) Sort Interrupt Mask d) Sum Interrupt Mask

6) Microprocessor comprises of _____.
   a) Register Section b) Control Unit c) ALU d) All

7) _____ is a dedicated register.
   a) PC b) IR c) A d) HL

8) _____ is stored by a register
   a) Data b) operand c) memory d) address

9) Data storage in stack is designed in _____ method.
   a) FIFO b) LILO c) FILO d) LIFO

10) NMI is a _____ interrupt.
   a) Type 0 b) Type 1 c) Type 2 d) Type 3

11) Output of the assembler in machine codes is referred to as _____.
   a) Object Program b) Source Program c) Macro instruction d) Symbolic Addressing

12) 8085 has _____ programmable registers.
a) 7 b) 8 c) 9 d) 10

13) Which of the following logic instructions can be used to complement a specific bit using a mask.
a) AND b) OR c) XOR d) NOT

14) _____ is the instruction that avoids unnecessary Jumps to terminate the program.
a) HLT b) NOP c) RET d) EI

15) _____ is a 4-bit microprocessor.
a) 8085 b) 8086 c) 8088 d) 4004

16) _____ Memory types cannot be re-written after once.
a) PROM b) EPROM c) EEPROM d) EAROM

17) _____ Cycle is required to fetch and execute an instruction in 8085 microprocessor.
a) clock b) machine c) memory d) instruction

18) _____ does not belong to 8085 flag register.
a) Carry Flag b) Sign Flag c) Zero Flag d) One Flag

19) _____ Instruction sets the carry flag.
a) CY set b) STR c) STC d) Set CY

20) The _____ chip is a latch.
a) 74LS138 b) 74LS373 c) 74LS244 d) 74LS245

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F. M. : 55

SECTION "B"

- ✓ *Attempt ANY FIVE questions*
- ✓ *Assume any suitable data if necessary*
- ✓ *Figures in margin indicate full marks for each questions*

1. a. Explain briefly the architecture of 8085 microprocessor. [4]
   b. Illustrate the steps and the timing of data flow when the instruction code 0100 1111(4FH-MOV C, A), stored in location 2005H, is being fetched. [3]
   c. Write a 8085 assembly program read 10 data elements from memory location starting at 2000H and shift them 4 bits right to output at port 02H. [4]

2. a. The memory map of a 4K (4096) byte memory chip begins at the location 2000H. Specify the address of the last location on the chip and the number of pages in the chip. [2]
   b. Design a seven segment LED output port with the device address F5H, using a 74LS138 3-to-8 decoder, a 74LS20 4-input NAND gate, a 74LS02 NOR gate and a common anode seven segment LED. [6]
      i. Given $\overline{WR}$ and $IO/\overline{M}$ signals from the 8085, generate the $\overline{IOW}$ control signal.
      ii. Explain the binary codes required to display 0 to F hex digits at seven segment display.
      iii. Write instructions to display digit 7 at the port.
   c. Explain absolute and partial address decoding with suitable examples. [3]

3. a. Design an interfacing circuit for 8-bit Analog to Digital converter using status check. Write a 8085 sample program for A/D conversion. [4]
   b. Define PUSH and POP operation. Explain the program execution and its data transfer process for CALL instruction. [4]
   c. Calculate the output current if the input is 82H and the converter is calibrated for a 0 to 2mA current range. (Given $R_f = 5K$, $R = 2.5K$) [3]

4. a. Write a program to create a delay of 1s using register pair. Assume frequency to be 1MHz. Clearly show the calculations. [4]
   b. Explain interrupt in 8085. Define maskable and non-maskable interrupt with example. [3]
   c. What are different types of logic operations in 8085? Explain their operation. [4]

5. a. Derive an expression to calculate voltage for a 8 bit DAC using summing amplifier. [4]
   b. Draw a block diagram of Microprocessor Controlled Temperature System and explain the components used. [5]
   c. What are the necessary steps for a microprocessor to communicate with memory? [2]

6. a. Write short notes on [2 × 3 = 6]
      i. CALL
      ii. Data Transfer operation
      iii. Memory Interfacing
   b. A set of three packed BCD numbers (six digits) representing time and temperature are stored in memory locations starting at XX50H. the seven-segment codes of the digits 0 to 9 for a common-cathode LED are stored in memory locations starting at XX70H, and the Output Buffer memory reserved at XX90H. Write a program and subroutines to unpack the BCD numbers and select an appropriate seven-segment code for each digit. [5]