

Roll No. ....

## **PHY-553**

### **Memory Devices and Microprocessors**

**M. Sc. PHYSICS (MSCPHY-12/13/16/17)**

**Second Year, Examination, 2018**

**Time : 3 Hours**

**Max. Marks : 80**

**Note :** This paper is of **eighty (80)** marks containing **three (03)** Sections A, B and C. Attempt the questions contained in these Sections according to the detailed instructions given therein.

#### **Section-A**

##### **(Long Answer Type Questions)**

**Note :** Section 'A' contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.

1. (a) Differentiate between Magnetic Memory and Semiconductor Memory. 10  
(b) Make a timing diagram of instruction MVI B, 32H. 9
2. (a) Discuss subroutines and the stack. 10  
(b) Discuss various types of addressing modes in a microprocessor. 9
3. (a) Explain the types of microprocessor operation according to their word size. 10

(B-15) **P. T. O.**

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- (b) What is the need of demultiplexing of address bus in 8085 microprocessor ? Explain. 9
4. (a) Explain the architecture of 8086 microprocessor. 10
- (b) Compare different logic families and discuss about best logic family. 9

### Section-B

#### (Short Answer Type Questions)

**Note :** Section 'B' contains eight (08) short answer type questions of eight (8) marks each. Learners are required to answer *four* (04) questions only.

1. Elaborate the following assembly language program :

```
LDA      2050H
MOV      B, A
LDA      2051H
MOV      C, A
LDA      2052H
ADD      B
ADD      C
STA      2070H
HLT
```

2. What is absolute and partial decoding of address bus ? Explain with the help of proper example.
3. Make a block diagram of data flow from memory to the MPU and explain it.
4. Discuss the working of 8259 interrupt controller.
5. Make a timing diagram for execution of OUT instruction in 8085  $\mu$ p.

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6. Differentiate between minimum and maximum mode of control signals in 8086  $\mu$ p.
7. Discuss the organization of a microprocessor based system.
8. What is low level language and high level language ?  
Write an assembly language for multiplying two numbers.

### Section-C

#### (Objective Type Questions)

**Note :** Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this Section are compulsory.

1. The address bus of 8086  $\mu$ p is of :
  - (a) 16 bit
  - (b) 20 bit
  - (c) 32 bit
  - (d) 10 bit
2. The address bus of 8085  $\mu$ p is of :
  - (a) 16 bit
  - (b) 20 bit
  - (c) 32 bit
  - (d) 10 bit
3. A latch is a :
  - (a) One byte memory device
  - (b) Two byte memory device
  - (c) One bit memory device
  - (d) None of the above

(B-15) **P. T. O.**

4. MOV A, B is :
  - (a) One byte instruction
  - (b) One bit instruction
  - (c) Two byte instruction
  - (d) None of the above
5. Total number of pins in 8085  $\mu$ p is :
  - (a) 20
  - (b) 30
  - (c) 50
  - (d) 40
6. What is the meaning of  $512 \times 8$  chip size ?
  - (a) 512 registers of 8 bit each
  - (b) 512 registers of 8 byte each
  - (c) 512 bit and 8 registers
  - (d) None of the above
7. Specify the crystal frequency required for an 8085  $\mu$ p to operate at 1.1 MHz :
  - (a) 1.5 MHz
  - (b) 2.2 MHz
  - (c) 2.0 MHz
  - (d) None of the above
8. The term nibble is used for the group of :
  - (a) 8-bit
  - (b) 10-bit
  - (c) 4-bit
  - (d) 20-bit

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9. Which of the following takes least power ?
- (a) TTL
  - (b) ECL
  - (c) CMOS
  - (d) All use same power
10. A dynamic RAM consists of :
- (a) 2 transistor 2 capacitor
  - (b) 1 transistor 2 capacitor
  - (c) Many transistors and many capacitors
  - (d) 1 transistor and 1 capacitor