

Roll No.

PHY-553

Memory Devices and Microprocessors

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

Second Year, Examination, 2017

Time : 3 Hours

Max. Marks : 60

Note : This paper is of **sixty (60)** marks containing **three (03)** sections A, B and C. Learners are required to 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 fifteen (15) marks each. Learners are required to answer *two* (02) questions only.

1. (a) What are microprocessors ? Discuss the organization of a microprocessor based system.

$7\frac{1}{2}$

(b) Discuss high level language. Differentiate between compiler and interpreter.

$7\frac{1}{2}$
2. (a) What is an instruction set ? In 8085, discuss according to their functional categories.

$7\frac{1}{2}$

(b) Give the architecture of 8086 Intel microprocessor and make the block diagram of logical signals in minimum mode.

$7\frac{1}{2}$

3. (a) Describe ROM, PROM, EPROM and their characteristics. 5
- (b) Discuss the TTL parameters. How can it be used to drive external load ? 5
- (c) Give a small summary of interrupt instructions in 8085 microprocessor. 5
4. (a) Make the block diagram of 8253 interval timer and discuss its functioning. $7\frac{1}{2}$
- (b) How the microprocessor can be used as a CPU ? Explain with proper block diagram. $7\frac{1}{2}$

Section-B

(Short Answer Type Questions)

Note : Section 'B' contains eight (08) short answer type questions of five (05) marks each. Learners are required to answer *four* (04) questions only.

1. Make a block diagram of a single board microcomputer using 8085 microprocessor. 5
2. Compare the advantages and disadvantages of SRAM and DRAM. 5
3. (a) Calculate the address lines required for an 8K-byte memory chip. $2\frac{1}{2}$
- (b) Calculate the number of memory chips needed to design 8K-byte memory if the memory chip size is 1024×01 . $2\frac{1}{2}$
4. Discuss the characteristics of CMOS. 5

5. What is the output of the following program ? 5
- ```
MVI A, OAH
MVI B, BOH
ANA B
OUT 02H
HLT
```
6. Classify 8086 instruction set. 5
7. Make a timing diagram for the transfer of byte from memory to MPU. 5
8. Discuss the features of 8259A interrupt controller. 5

### 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. Interrupt controller 8259 is a :
- (a) 40 pin DIP
  - (b) 20 pin DIP
  - (c) 28 pin DIP
  - (d) 32 pin DIP
2. A flip-flop is a device of :
- (a) One bit memory
  - (b) Two bit memory
  - (c) One byte memory
  - (d) Two byte memory

3. JUMP instruction is :
  - (a) One byte
  - (b) 3 bit
  - (c) Two byte
  - (d) 3 byte
4. 10 address lines can address the memory :
  - (a) 256 K
  - (b) 1024 K
  - (c) 128 K
  - (d) 512 K
5. Which is machine control instruction ?
  - (a) HLT
  - (b) MOV
  - (c) JUMP
  - (d) MVI
6. Which word is not related to the operation of an instruction ?
  - (a) Execute
  - (b) Compile
  - (c) Mnemonic
  - (d) Interrupt
7. Identify the interfacing device :
  - (a) Subtractor
  - (b) Encoder
  - (c) Both (a) and (b)
  - (d) Adder

8. Which is 8-bit microprocessor ?
  - (a) 8086
  - (b) 80286
  - (c) 80386
  - (d) 8085
9. A simple buffer is a logic circuit with :
  - (a) One input and one output
  - (b) One input and many output
  - (c) Many input and one output
  - (d) Many input and many output
10. Intel pentium processor has the data bus :
  - (a) 32-bit
  - (b) 120-bit
  - (c) 64-bit
  - (d) 128-bit

