

Reg. No.....Name.....

**M.SC DEGREE END SEMESTER EXAMINATION OCTOBER 2016**  
**SEMESTER - 3: PHYSICS**  
**COURSE: P3PHYT12EL- MICROELECTRONICS AND SEMICONDUCTOR**  
**DEVICES**

Common for Regular (2015 Admission) & Supplementary / Improvement (2014 Admission)

Time: Three Hours

Max. Marks: 75

**PART A (Objective)**(Answer **all** questions. Each question carries 1 Mark)

1. Intel 8085 is a \_\_\_\_\_ bit processor  
a) 8                    (b) 16                    (c) 32                    (d) 64
  
2. \_\_\_\_\_ register holds data during an arithmetic/logic operation in a microprocessor  
a) stack pointer                    (b) instruction                    (c) temporary                    (d) program counter
  
3. In an instruction \_\_\_\_\_ recognizes the operation to be performed.  
a) Operand                    b) opcode                    c) comment                    d) label
  
4. In a heterojunction material the forbidden bandgap of the wide-gap material completely overlaps the bandgap of the narrow-gap material, then the case is called  
a) straddling                    b) staggered                    c) broken gap                    d) isotype
  
5. In a microcontroller the data is stored in  
a) ROM                    (b) EPROM                    (c) OTPROM                    (d) RAM  
(1 x 5 = 5)

**PART B (Short Answer)**(Answer **any five** questions. Each question carries 2 Marks)

6. What is memory?
7. What are the applications of a microcontroller?
8. What is a stack?
9. Distinguish unconditional and conditional jump.
10. What is a coprocessor?

11. What is specific contact resistance?
12. What is a tunneling barrier?
13. What is interrupt driven data transfer scheme?

(2 x 5 = 10)

### **PART C (Problem/Short Essay)**

(Answer **any three** questions. Each question carries 4 Marks)

14. Draw the energy band diagram of an nN hetero junction.
15. Explain flag registers and their operations in 8085.
16. Write an assembly language program to add two eight bit numbers..
17. Draw and explain the timing diagram of read cycle for 8086 microprocessor.
18. List the buses found in all computer systems with a neat sketch.

(4 x 3 = 12)

### **PART D (Essay)**

(Answer **all** questions. Each question carries 12 Marks)

19. Compare standard I/O and memory mapped I/O?

**OR**

Explain the memory organization in Intel 8085.

20. With a block diagram discuss the internal architecture of Intel 8086.

**OR**

Discuss the various addressing modes of Intel 8086.

21. Describe the important operational features of 8051.

**OR**

Discuss the programming concepts of 8051

22. Discuss the two types of metal-semiconductor ohmic contacts.

**OR**

Discuss the energy band gap of heterojunction materials and the concept of 2- dimensional electron gas.

(12 x 4 = 48)

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