

Unit IV

7. Discuss the principle and working of any A/D and D/A converter in detail. **20**
8. (a) Discuss the various types of semiconductor memories. **12**
- (b) Write short note on content addressable memories and on other advanced memories. **8**

No. of Printed Pages : 04

Roll No.

AA284

M. Sc. EXAMINATION, May 2019

(First Semester)

(B. Scheme) (Re-appear)

PHYSICS

PHY507B

Fundamental of Electronics

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Describe structure, operation and characteristics of Depletion and Enhancement MOSFET. **12**
(b) Discuss the operation of a JFET along with its V-I characteristics. **8**
2. (a) Explain the construction, working and characteristics of any *four* layer *p-n-p-n* device. **12**
(b) Discuss the working and energy level diagram of tunnel diode. **8**

Unit II

3. (a) Describe inverting op-amp amplifier and explain how it works. **12**
(b) Explain the terms in op-amp :
 - (i) Input offset current
 - (ii) Input offset voltage
 - (iii) CMRR
 - (iv) Input bias current. **8**

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4. (a) Describe how op-amp can perform the different important mathematical operations. **10**
(b) Explain working of op-amp differential amplifier and discuss its mode in which it can be operated. **10**

Unit III

5. (a) Draw the block diagram of a 5-bit asynchronous counter and explain its operation. **10**
(b) Distinguish between half adder and a full adder. Give the circuit and truth table of a Full adder. **5**
(c) Simplify the following expression by using Karnaugh map : **5**

$$Z = ABC\bar{C} + A\bar{B}\bar{C} + ABC + A\bar{B}C$$

6. (a) Briefly describe R-S, J-K, D and T-type flip-flops. **10**
(b) What are Encoders ? What are the difference between a multiplexer and encoder ? Show connection diagram of them. **10**

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