

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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M.Sc. Physics 2nd Semester

(2056)

ELECTRONICS-II

Paper-PHY-8024

Time Allowed : Three Hours] [Maximum Marks : 60

Note :— Attempt five questions in all, choosing ONE question each from Section-I, II, III, and IV, including compulsory question. Section-V is compulsory.

SECTION-I

1. (a) By using Karnaugh Mapping technique, minimize the following function:

$$Q = \Sigma [2,3,4,6,7,8,9,11,12,13,15] \quad 6$$

- (b) Design any 4-bit Decoder circuit. How is it different from a De-multiplexer circuit? 6

2. (a) Why are logic families so called? Write a short note on different performance characteristics of Logic families. 6

- (b) Draw and explain the simple TTL-CMOS circuit system for an n-bit digital system. 6

SECTION-II

3. (a) Differentiate between synchronous and asynchronous counter. Discuss synchronous decade counter with appropriate sequence. 6
- (b) Design ripple counter for 4-bit down counter using flip-flop. Draw proper sequence and waveforms for it. 6
4. (a) Discuss master slave J-K flip-flop to overcome race round condition of S-R flip-flop. Convert S-R flip-flop into J-K flip-flop. 6
- (b) What is Switch contact bounce circuit? Explain in detail the significance of Switch contact bounce circuit. 6

SECTION-III

5. Explain the working of a Dual slope type Analog to Digital converter. Also explain how it is different from single slope type of analog to digital converter. 12
6. Write the detail on:
- (a) Classification of various memories of storage. 6
- (b) Charge coupled memory devices system along with their useful applications. 6

SECTION-IV

7. (a) Give the detail of organizing and operation of 8085A microprocessor. 6
- (b) Discuss various addressing modes of instructions 8085 with examples. 6

8. What are the advantages of integrated circuits? List and explain the steps involved in fabrication of a monolithic integrated circuit assuming the substrate is already available. 12

SECTION-V

9. (a) Distinguish between Address bus and Data bus.
(b) What do you understand by the term Propagation Delay?
(c) Write the difference between Microprocessor and Microcontroller.
(d) How are the bits stored in the Shift register circuits?
(e) The charge coupled device is which kind of memory in digital electronics.
(f) What do you understand by the term Fan-in? $6 \times 2 = 12$