(i) Printed Pages: 3   Roll No. ....

(ii) Questions   : 9   **Sub. Code :** | 3 | 7 | 1 | 2 |

                              Exam. Code : | 0 | 4 | 7 | 3 |

M.Sc. Physics 2nd Semester

(2042)

ELECTRONICS–II

Paper : PHY-8024

Time Allowed : Three Hours]   [Maximum Marks : 60

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

SECTION—I

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

    (b) Minimize the function $Q = \Sigma[0, 1, 2, 3, 4, 7, 8, 9, 11, 12, 14]$ using Boolean algebra method.

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

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

SECTION—II

3. (a) Discuss in detail the difference between a combinational circuit and sequential circuits.

   (b) What is Ring Counter ? Mention some of the applications of a Ring Counter in brief.

4. What is Shift register circuit ? Where it is used ? Explain with the help of a diagram, the working of a Universal Shift Register. Also briefly discuss the difference between Universal Shift Register and basic Shift Register circuit.

SECTION—III

5. Explain the working of the Simultaneous Conversion type Analog to Digital Converter. Also mention the two important characteristics of converter in selection of Digital to Analog converter.

6. (a) Write a short note on classification of semiconductor memories based on the mode of access of the memories.

   (b) Explain the basic working of Charge Coupled device memory. Also mention some of applications of Charge Coupled device memories.

SECTION—IV

7. (a) Why microprocessor is so called ? Explain in brief how the Arithmetic operations are performed in 8085 microprocessor.

(b) Write the full format and explain in detail the following instructions :

  (i)   IN
  (ii) SUI
  (iii) XRA
  (iv) OUT
  (v)   JPE
  (vi) MOV.

8. Write a short note on the following :

  (a) Masking and Etching process

  (b) Epitaxial growth in IC fabrication system.   12×4=48

SECTION—V

9. (a) Is there any difference between a simple register and Shift register ?

  (b) What is the significance of Switch contact bounce circuit in digital electronics ?

  (c) Write the difference between Parity generator and Parity counter.

  (d) The E^2PROM is which kind of memory in digital electronics ?

  (e) What is the significance of Linearity error in Digital to Analog converter ?

  (f) What do you understand from the term 'Propagation Delay' ?   2×6=12