Exam.Code:0473
Sub. Code: 3713

1058

M. Sc. (Physics) Second Semester
PHY-6015: Electronics – II

Time allowed: 3 Hours Max. Marks: 60

***NOTE:** Attempt five questions in all, including Question No. I (Section-I) which is compulsory and selecting one question each from Section II-V.*

x-x-x

Section - I

Q.1 (a). What is Switch contact bounce circuit?

(b). Which RAM uses Flip-Flops?

(c). Define the term 'quantization error'.

(d). What is the unit of memory in digital system?

(e). Which logic family is the most commonly used and why?

(f). What is Buffer Register? Explain its significance in microprocessor system. 2 x 6 = 12.

Section - II

Q.2. Discuss the comparison table of TTL, CMOS and ECL circuits, along with explains the various factors affecting it. Explain each factor one by one.

Q.3.(a).Minimize the following function using K-map method $f(A, B, C, D) = \sum (0, 1, 5, 7, 8, 9, 10, 11, 13, 15)$.

b). Discuss the Multiplexer as a Logic function generator. Also draw the circuit diagram for implementation of 3 Input function $Y(A, B, C) = \sum m (1, 2, 5, 6)$ using 3 Select-Line input multiplexer.

Section - III

Q.4.(a). Can a Shift Register be used as a counter? Explain the answer in detail, with the help of a diagram.

(b). What is Johnson counter? Draw the circuit and explain the working of a 4 bit Johnson counter.

Q.5.(a). How you convert T flip flop to D flip flop? Explain the conversion using truth table along with the help of a circuit diagram.

(b).What is race–around condition? How you can overcome the race – around condition using J-K Flip Flop. Explain the method in detail, with the help of a diagram.

Section - IV

Q.6. (a). What are the different performance characteristics of Analog to Digital Converter and how it is useful for the selection of Converter?.

(b). A four bit Digital to Analog converter has a step size of 10 mV. Calculate the full scale output voltage and also find the percentage resolution for the converter.

Q.7. (a). What is PROM ? Explain its various types. If the capacity of 2K x 16 PROM is to be expanded to 16K x 16. Calculate the total number of PROM chips required. Also find number of address lines in the expanded memory.

(b). What is Charged Coupled Device Memory system? List some useful applications of Charged Coupled Device Memory.

P.T.O.

Section - V

Q.8. (a) Classify the different types of Instruction in 8085 microprocessor, based on size. Explain the different types with the help of at least two examples.

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

(i). ADI (ii). ANA (iii). LDI (iv). ORI (v). JMP (vi). CALL.

Q.9.(a). Give the basic use of Diffusion and Masking in IC fabrication system.

(b). Explain the Idea of Logic Operations in simplified way. Also discuss the two types: Rotate and Compare operations in brief.

12 x 4 = 48.

x-x-x