K15P 0307

Reg. No. : ....

Name : ....

I Semester M.Sc. Degree (Reg./Sup./Imp.) Examination, November 2015
(2014 Admn. Onwards)
PHYSICS
PHY1C04 : Electronics

Time : 3 Hours   Max. Marks : 60

SECTION – A

Answer **both** questions (Either **a** or **b**). **Each** question carries **12** marks .

1. a) Draw the basic differential amplifier circuit using transistors and explain. Derive expressions for the AC voltage gain in the single ended and double ended configuration.

OR

   b) Distinguish between combinational and sequential logic circuits. Draw the circuit diagram of a master slave JK flip flop and explain its working using a truth table. How is it different from edge triggering ?

2. a) Describe with circuit the working of a) Integrator b) Differentiator. Sketch their output wave forms and give one application each. Design a differentiator that will differentiate an input signal of fmax = 100 HZ.

OR

   b) Distinguish between asynchronous counters and synchronous counters. Design a mod-6 asynchronous counters using TFFs. Explain the effects of propagation delay in Ripple counters.   (2×12=24)

3. a) What is slew rate of an 0 pamp ?

   b) Obtain the slew rate equation.

   c) Explain the causes and significance of slew rate in applications. How does slew rate differ from transient response ?

4. a) What is a zero crossing detector ?

   b) Describe the working of Schmitt trigger.

   c) Explain the difference between inverting and differential summing amplifiers.

5. a) What is multiplexing ?

   b) Name the types of multiplexing. How can a multiplexer be used to realize a logic function ?

   c) What is a de multiplexer ? Why is a multiplexer called a data selector and a de multiplexer called a distributor ?

6. a) What is a flip flop ? Give its applications.

   b) Distinguish between synchronous and asynchronous latches.

   c) Convert a J-K flip flop into a D-flip flop.

7. a) What is DIA conversion ?

   b) The logic levels used in an 8-bit R-2R ladder DAC are 0=0V and 1=5V. What is the binary input when the analog output is 4V ?

   c) With the help of neat diagram explain the working of R-2R ladder network type DAC. What is the advantage of R-2R ladder DAC over the weighted resistor type DAC ?

8. a) Distinguish between RAM and ROM.

   b) What is an EPROM ? Give its advantages.

   c) Draw the functional block of 8085 micro processor and explain the blocks.

   $(4 \times 9 = 36)$