

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 $f_{max} = 100$ 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 op amp ?
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 ?

P.T.O.

4. a) Describe the working of summing amplifier.
b) 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. **(4×9=36)**