Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[4957]-1046

S.E. (Electronics/Electronics and Telecommunication)

(II Semester) EXAMINATION, 2016

INTEGRATED CIRCUITS

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

***N.B.* :—** (*i*) Answer Q. No. **1** *or* Q. No. **2,** Q. No. **3** *or* Q. No. **4,** Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8,**

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Use of electronic pocket calculator is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) What are the different types of noise those are associated with opamps ? Draw opamp noise model and give expression for output noise voltage. [6]

(*b*) With neat diagram explain the necessity and working of current mirror circuit. [6]

Or

2. (*a*) Following specifications are given for dual input balance output difference amplifier : [6]

P.T.O.

R_C = 2.2 KΩ, R_E = 4.7 KΩ, Rin1 = Rin2 = 50 Ω, + V_{CC} = 10 V, – V_{EE} = – 10 V, βac = βdc = 100, V_{BE} = 0.715 V. Determine :

(*i*) Operating point i.e. I_{CQ} and V_{CEQ}

(*ii*) Input and output resistance.

(*b*) What is the need of frequency compensation ? Explain any *one* method of external frequency compensation. [6]

3. (*a*) Explain practical differentiator circuit with neat circuit diagram. What are the limitations of ideal differentiator ? [6]

(*b*) Draw and explain sample and hold circuit using Op-amp. [6]

Or

4. (*a*) Draw and explain half wave precision rectifier circuit. [6]

(*b*) Explain the working of inverting Schmitt trigger. Also derive the equations for the trigger points. [6]

5. (*a*) Explain V2F converter with appropriate waveforms. [7]

(*b*) Explain binary weighted resistor type of DAC. [6]

Or

6. (*a*) With the help of neat diagram explain the operation of Dual Slope ADC. [7]

(*b*) Calculate output voltage of 8 bit DAC for digital input 10000000 and 11011101 with reference voltage of 10 V. [6]

7. (*a*) With the help of neat block diagam explain operation of PLL. Define the terms Lock range and Capture range. [7]

(*b*) Write a short note on fixed and variable voltage regulators. [6]

Or

8. (*a*) Draw and explain circuit of FM demodulator using PLL. [7]

(*b*) Explain low drop out voltage regulator. [6]