F 3660 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Fifth Semester

Branch : Electrical and Electronics Engineering

EE 010 505 – LINEAR INTEGRATED CIRCUITS (EE)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Define CMRR rate and its effect in detail.
2. Draw the equivalent circuit of *op-amp* and explain.
3. Draw *op-amp* multiplier using log amplifier and derive its design equations.
4. Explain the advantages and applications of all pass filter with an example.
5. Explain the application of PLL as FSK demodulator.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Draw the *op-amp* unity gain amplifier and explain it in detail. Derive its Vo.
7. Draw *op-amp* zero crossing detector and explain its principle in detail.
8. Explain the characteristics of Notch filter in detail.
9. Explain the applications and limitations of SMPS.
10. Draw the functional block diagram of 565 PLL timer and explain it in detail.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. (i) Explain the applications of *op-amp* as inverting, non-inverting amplifiers, sign changer and subtractor with neat diagrams. Derive their Vo expressions.

    (ii) Derive an expression for CMRR for a basic differential amplifier.

Or

Turn over

12. (i) Explain the characteristics of a practical *op-amp* in detail.

(ii) Explain the frequency response of *op-amp* with neat diagram.

13. (i) Draw *op-amp* integrator and differentiator. Explain them. Bring out its design details.

(ii) Design a *op-amp* differentiator to differentiate an input signal that varies in frequency from 100 Hz to about 1 KHz.

(iii) Draw *op-amp* peak detector and explain it detail.

Or

14. (i) Draw *op-amp* log and antilog amplifiers and explain them. Derive their Vo expressions.

(ii) Draw *op-amp* instrumentation amplifier and explain it.

15. (i) Differentiate active filter from passive filter.

(ii) Draw an *op-amp* second order LPF and explain it. Derive its design equations.

Or

16. (i) Give an account on "Higher order filters".

(ii) Draw an *op-amp* first order HPF and explain it . Bring out its design equations.

17. Draw an *op-amp* Wien bridge oscillator and explain it in detail. Derive the condition for oscillation.

Or

18. Draw a neat schematic of SMPS. Explain its principle of working in detail. Explain its applications. Differentiate SMPS from linear mode power supply.

19. (i) Draw a monostable using IC 555 and explain it in detail.

(ii) Explain the application of PLL as frequency divider with a neat diagram.

Or

20. Write technical notes on :

(i) IC 565 for AM detection.

(ii) Capture and lock range of PLL.

(iii) Applications of astable multivibrator.

(5 × 12 = 60 marks)