FACULTY OF ENGINEERING

BE V Semester (CBCS) (ECE)(Supple.) Examinations, May/June 2019

Subject: Linear ICs and Applications

Time: 3 Hours. **Max. Marks: 70**

Note: Answer all question from Part – A, & answer any 5 questions from Part – B

PART – A (10 x 2 = 20 Marks)

1. Explain the terms balanced output and unbalanced output?
2. List the ideal characteristics of an Op-Amp?
3. Draw the circuit of a log amplifier using Op-Amp?
4. Compare inverting and non-inverting amplifiers?
5. Explain how an op-amp can be used as comparator?
6. How precision rectifiers differ from conventional rectifier?
7. Mention any four applications of IC 555 timer?
8. Draw pin diagram of Voltage Controlled Oscillator (VCO) IC 566?
9. List the characteristics of three terminal voltage regulators?
10. Define resolution of an n bit DAC and find resolution of 12 bit DAC when output varies from 0 to 10v?

PART – B (5 x 10 = 50 Marks)

11. a) Define frequency compensation? Explain any two external compensation techniques (5)
    b) Define following parameters as applied to an Op-amp (5)
    i) Input bias current ii) Input Offset current iii) Input Offset Voltage iv) CMRR
    v) Slew rate
12. a) Draw and explain the commonly used three op-amp instrumentation amplifier circuit? Derive the expression for its gain? (5)
    b) Explain the voltage to current converter if the load is i) floating and ii) grounded. (5)
13. a) Explain the positive clipper with negative reference and negative clipper with positive reference? (5)
    b) Design a band pass filter $f_L = 2KH_z$ and gain $A_o = 10$. Choose C = 1 « F. (5)
14. a) List the applications of PLL and explain any two in detail? (5)
    b) Using Op-Amp design a Triangular wave form generator and explain its operation? Derive the expression for its frequency? (5)
15. a) With the help of neat circuit, explain the operation of Dual Slope ADC? (6)
    b) Design an adjustable regulator from the 7805 IC regulator to get an output voltage 9v (Assume $I_Q = 4.2mA$) (4)
16. a) Explain the operation of sample and hold circuit using op amp with neat circuit? (5)
    b) Derive the output expression for an inverting type summing amplifier along with the circuit diagram? (5)

17. a) Design a square wave generator using IC 555 timer for a 1.5 KHz and Duty cycle of i) 60% and ii) 50% ? (4)

b) Derive the expression for a Differential gain and common mode gain of a Dual input balanced output differential amplifier? (6)

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