Reg. No. : | | | | | | | | | | |

Question Paper Code: 31442

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Fourth Semester

Electronics and Communication Engineering

01UEC402 – ANALOG CIRCUITS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. State Barkhausen criterion condition for sustained oscillation to be produced in a oscillator.
2. Draw the circuit of Armstrong oscillator and mention its application.
3. Define the parameter that affects the switching speed of transistors.
4. Compare clipper and clamper.
5. Define slew rate and also mention the methods of improving slew rate?
6. List out the advantages of ICs over discrete components?
7. What is the advantage of precision rectifier compared to a normal rectifier?
8. Give the schematic of Op-Amp based sine wave to square wave converter.
9. Design a monostable multivibrator for a pulse width of 10 *ms* by using IC 555.
10. An 8 bit DAC has resolutions of 25*mv*/LSB. Find V_{OFS} and V_o if the input is $(11100000)_2$.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain in detail the construction and working principle of RC phase shift oscillator and derive the expression for frequency of oscillation in it. (16)

Or

(b) (i) Draw the circuit of Colpitt's oscillator and derive the expression for its frequency of oscillations. (10)

(ii) How is it modified to work as Clapp's oscillator? What is its application? (6)

12. (a) Explain the working of monostable multi vibrator using BJT with relevant waveforms. Derive the expression for varying its pulse width at the output. (16)

Or

(b) (i) Design a Schmitt trigger using BJT with UTP=4*V* and LTP=2*V*. Assume V_{cc}=12*V*, I_c = 5*mA* and hfe=100. (8)

(ii) Explain the collector coupled bistable multivibrator in detail. (8)

13. (a) (i) Discuss in detail about frequency compensation of an Op-Amp. (8)

(ii) Discuss the DC characteristics of operational amplifier. (8)

Or

(b) Explain in details the step by step procedure for manufacturing process of monolithic bipolar transistor. (16)

14. (a) What is an instrumentation amplifier? With a neat diagram explain the working of an instrumentation amplifier whose gain can be set by a gain setting resistor. (16)

Or

(b) With a neat block diagram explain the working of phase locked loop. (16)

15. (a) (i) Construct R-2R DAC and find the output for the binary word 1001. (8)

(ii) Explain the working principle of dual slope ADC with neat sketch. (8)

Or

(b) (i) Discuss low voltage regulators using IC723. (8)

(ii) Explain the principle of operation of 555 IC timer. (8)

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