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Question Paper Code: 54042

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electronics and Communication Engineering

15UEC402 - ANALOG CIRCUITS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Identify the typical value of quality factor for crystal oscillators.
(a) 20,000 (b) 1000 (c) 100 (d) 10
2. If an astable multivibrator has $C_1 = C_2 = 1000 \text{ pF}$ and $R_1 = R_2 = 20 \text{ K}\Omega$, calculate the frequency of oscillation
(a) 2.25 KHz (b) 22.5 KHz (c) 3.625 KHz (d) 36.25 KHz
3. The input offset current equals
(a) the average of two base currents
(b) the difference between two base-emitter voltages
(c) the collector current divided by the current gain
(d) the difference between two base currents
4. A PLL can be used to demodulate
(a) An AM signal (b) A DSB SC signal (c) A SSB signal (d) A FM signal
5. On which of the following does the conversion depend in ladder-network conversion
(a) Comparator (b) Digital counter (c) Control logic (d) Clock

PART - B (5 x 3 = 15 Marks)

6. What are the classifications of Oscillators?
7. Why is monostable Multivibrator called delay circuit?
8. Mention the advantages of integrated circuits.
9. What is Schmitt trigger?
10. Why is the R-2R ladder network DAC better than weighted resistor DAC?

PART - C (5 x 16 = 80 Marks)

11. (a) Draw the circuit of Hartley oscillator and explain its working. Derive the expressions for frequency of oscillation and condition of oscillation. (16)

Or

- (b) Explain in details about the Crystal oscillator with neat diagram. (16)

12. (a) With a neat sketch, explain the working of an astable multivibrator. On what factors does the frequency of the output waves depend. (16)

Or

- (b) Define Clipping circuits. Summarize briefly about Series and Shunt clipper. (16)

13. (a) Explain briefly about the diffusion process with neat figure. (16)

Or

- (b) Discriminate in detail about AC performance characteristics of an op-amp. (16)

14. (a) Illustrate the working of an instrumentation amplifier with a circuit. Give its characteristics and applications. (16)

Or

- (b) Explain the operation of IC 565 PLL with its block diagram. (16)

15. (a) Explain the working of successive approximation A/D converter. (16)

Or

- (b) Sketch and explain the functional diagram of IC723 regulator. (16)