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

Question Paper Code: 44402

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Fourth Semester

Electronics and Communication Engineering

14UEC402 - ANALOG CIRCUITS

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. For sustained oscillation the value of Aβ must be

   (a) = 1 (b) > 1 (c) <1 (d) ≠ 1

2. The resonant frequency of a crystal oscillator is ____ proportional to the thickness of the crystal

   (a) directly (b) inversely (c) not (d) none of these

3. Speed up capacitor is used to improve

   (a) rise time (b) delay (c) switching time (d) storage time

4. Monostable multivibrator has ___ quasi stable state.

   (a) One (b) two (c) three (d) none of these

5. Monolithic IC consists of

   (a) Active components (b) Passive components
   (c) Both a and b (d) None of the above

6. _____means growing single crystal silicon structure upon a original silicon substrate.

   (a) Etching (b) Epitaxy (c) Ion implantation (d) Diffusion

7. _____ is a nonlinear application of operational amplifier.

(a) Adder (b) Subtractor (c) Differentiator (d) Comparator

8. Precision rectifier are used to rectify voltages in range of _____volts.

(a) milli (b) kilo (c) mega (d) giga

9. _____ diode is used for liner voltage regulation.

(a) PN junction (b) Avalanche (c) Zener (d) Schottky

10. What mode of operation of the timer IC is utilized for a frequency divider?

(a) monostable (b) Bistable (c) Astable (d) None of these

PART - B (5 x 2 = 10 Marks)

11. Sate Barkhausen criterion for sustained oscillation.

12. Compare Astable multivibrator and Bistable multivibrator.

13. Define slew rate?

14. List the applications of instrumentation amplifier.

15. What are the advantages of weighted resistor DAC over R-2R DAC?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the principle of operation of Colpitts Oscillator. (8)

(ii) How is a clap oscillator modified from a Colpitts oscillator. (8)

Or

(b) (i) Discuss the classification of oscillators. (4)

(ii) Explain Barkhausen criterion for sustained oscillations. (12)

17. (a) What is the response of a low pass RC circuit for sinusoidal, step, square wave and ramp inputs. (16)

Or

(b) Explain the operation of a Schmitt trigger using two transistors for a sinusoidal input with Circuit diagram and waveforms. (16)

18. (a) Write short notes on the following
    (a) slew rate
    (b) Virtual ground
    (c) Thermal
    (d) Power supply rejection ratio. (16)

Or

(b) What is the need for frequency compensation in practical op-amps? Explain the frequency compensation techniques in detail. (16)

19. (a) Explain the working of PLL with neat block diagram and derive the expression for lock in range and capture range. (16)

Or

(b) Draw and explain the circuit of voltage to current converter and current to voltage converter. (16)

20. (a) Draw and explain the functional block diagram of a 723 regulator. (16)

Or

(b) (i) Discuss the operation of sample and hold circuit with circuit diagram. (8)

(ii) With block diagram, explain the working of IC555 in Astable mode. (8)