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

Question Paper Code: 41442

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. The range of values obtained from ion implanted resistors is

   (a) 20Ω to 30 KΩ (b) 200Ω to 1KΩ
   (c) 30 KΩ to 500 KΩ (d) None of the these

6. The speed of a comparator is expressed by means of

   (a) Response time (b) Accuracy
   (c) logic threshold (d) None of these

7. Wide band pass filter has Q factor

(a) = 10 (b) > 10 (c) <10 (d) = 100

8. Differentiator is _____ filter.

(a) high pass (b) low pass (c) band pass (d) band stop

9. Which of the following ADC is less accurate?

(a) successive approximation (b) flash type
(c) integrating type (d) All the above

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) A crystal has the following parameters L = 0.5 H, C_s = 0.006 pF, C_p = 1 pF and R = 5KΩ. Find the series and parallel resonant frequencies and Q factor of the crystal. (16)

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

Or

(b) (i) Explain the working principle of Bistable multivibrator with neat diagram. (8)

(ii) Illustrate the trigerring methods for bistable multivibrators. (8)

18. (a) (i) Discuss the various ways to fabricate diodes. (8)

(ii) Explain how a monolithic capacitor can be fabricated? (8)

Or

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

19. (a) (i) For a maximum frequency of 100 Hz design a differentiator circuit and draw the frequency response for the same. (8)

(ii) Discuss the working of Scale Changer with a neat sketch. (8)

Or

(b) With a neat sketch, explain the working of (i) Schmitt trigger (ii) Precision Rectifier. (16)

20. (a) (i) Using an Op-Amp draw the functional diagram of a successive approximation ADC and explain its working. (10)

(ii) In a dual slope ADC, the reference voltage of 2 volts is to be integrated for 20 milliseconds. The magnitude of peak output of the integrator capacitor is 0.1 μF. Calculate the value of the integrating resistor. (6)

Or

(b) Draw and explain the functional block diagram of three terminal fixed and adjustable voltage regulator. (16)

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