A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 93303

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Third Semester

Electrical and Electronics Engineering

19UEE304 - Analog Electronics

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. If the positive terminal of the battery is connected to the anode of the diode, then it is known as CO1- U

   (a) Forward biased (b) Reverse biased (c) Equilibrium (d) Schottky barrier

2. The number of pn junctions in a BJT is/are CO1- U

   (a) 1 (b) 2 (c) 3 (d) 4

3. The total emitter current (IE) is given by_____ CO2-App

   (a) IE = IpE * InE (b) IE = IpE – InE (c) IE = IpE / InE (d) IE = IpE + InE

4. A transistor has an IC of 100Ma and IB of 0.5Ma. What is the value of α_{dc}? CO2-App

   (a) 0.565 (b) 0.754 (c) 1.24 (d) 0.995

5. Which of the following is not a terminal for the operational amplifier? CO3- U

   (a) Inverting terminal (b) Non-inverting terminal

   (c) Output terminal (d) None of the mentioned

6. What are the units of slew rate? CO3- U

   (a) Second/Volt (b) Volt/second (c) It is a ratio, no units (d) Ohm/second

7. A phase shift oscillator is designed to oscillate at 155Hz. Determine the value of R_f. (Take C=0.30μF) CO4- App

   (a) 399Ω (b) 3.98MΩ (c) 13.9Kω (d) 403Kω

8. Calculate the frequency of oscillation for RC phase shift oscillator having the value of R and C as 35Ω and 3.7μF respectively. CO5- App

(a) 1230 Hz (b) 204 Hz (c) 502Hz (d) 673 Hz

9. Determine the time period of a monostable 555 multivibrator CO5- App

(a) T = 0.33RC (b) T = 1.1RC (c) T = 3RC (d) T = RC

10. A monostable multivibrator has R = 120Kω and the time delay T = 1000ms, calculate the value of C? CO5- App

(a) 0.9μF (b) 1.32 μF (c) 7.5 μF (d) 2.49μF

PART – B (5 x 2= 10 Marks)

11. Draw the VI characteristics of PN junction diode. CO1-U

12. A transistor is connected in CE configuration. Collector supply voltage Vcc=10V, RL=800Ω, voltage drop across RL=0.8V, α=0.96. What is base current? CO2-App

13. List out the applications of Integrator and Differentiator CO3-U

14. Draw a circuit for converting a square wave into a series of positive pulses. CO4-App

15. How VCO differ from oscillator? CO4-U

PART – C (5 x 16= 80Marks)

16. (a) Derive the construction of PN junction diode. Explain the forward and reverse characteristic of PN junction diode and obtain its VI characteristic curve. CO1-U (16)

Or

(b) Explain the construction and principle of operation of depletion MOSFET with suitable diagram. CO2-App (16)

17. (a) Draw the voltage divider bias circuit and derive an expression for its stability factor. CO2- App (16)

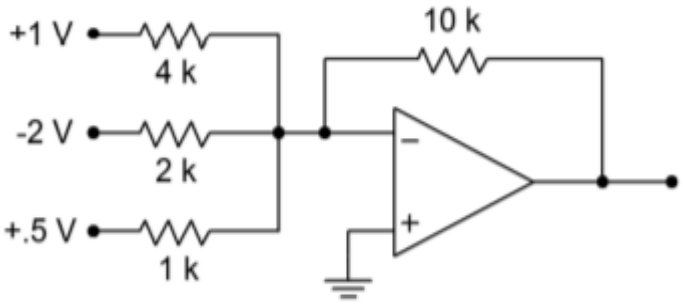
Or

(b) Draw the circuit diagram of an emitter-coupled differential amplifier and explain the operation. CO2- U (16)

18. (a) Draw and explain the operation of an ac voltage follower having very high input resistance. CO3- U (16)

Or

(b) What is the output of the summing amplifier in figure below, with the given DC input voltages? CO3- Ana (16)



19. (a) Draw the circuit of a Wien Bridge oscillator and derive an expression for its frequency of oscillation. CO4- App (16)

Or

(b) Explain how a comparator can be used as a zero crossing detector CO4- App (16)

20. (a) Design a symmetrical square waveform generator of 10kHz using 555 timer. CO5- C (16)

Or

(b) Design a monostable multivibrator with trigger pulse shaping which will drive a LED on for 0.5 second each time is pulsed. CO4- C (16)

93304