A

Question Paper Code: 93303

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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,   CO1- R
   then it is known as

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

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

   (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   CO4- App
   value of R_f. (Take C=0.30μF)

   (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

<div align="center">PART – B (5 x 2= 10 Marks)</div>

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

12. A transistor is connected in CE configuration. Collector supply voltage V_{cc}=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

<div align="center">PART – C (5 x 16= 80Marks)</div>

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)

<div align="center">Or</div>

   (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)

<div align="center">Or</div>

   (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)

<div align="center">Or</div>

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(b) What is the output of the summing amplifier in figure below, with the given DC input voltages?   CO3- Ana   (16)
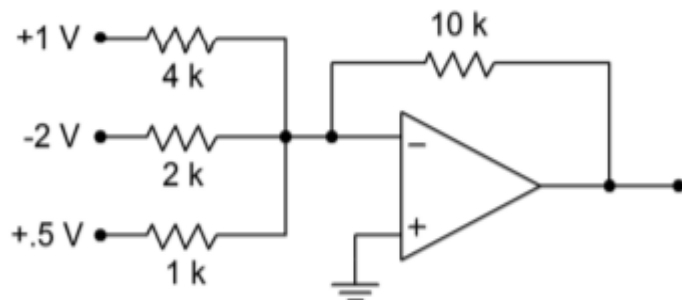
19. (a) Draw the circuit of a Wien Bridge oscillator and derive an expression for its frequency of oscillation.   CO4- App   (16)

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)

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