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Question Paper Code: 93304

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2021

Third Semester

Electrical and Electronics Engineering

19UEE304 – Analog Electronics

(Regulation 2019)

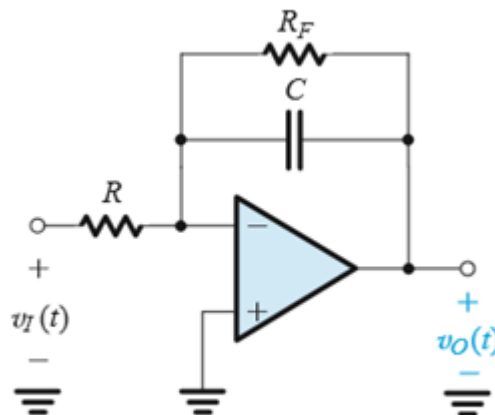
Duration: 1:45 hours

Maximum: 50Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

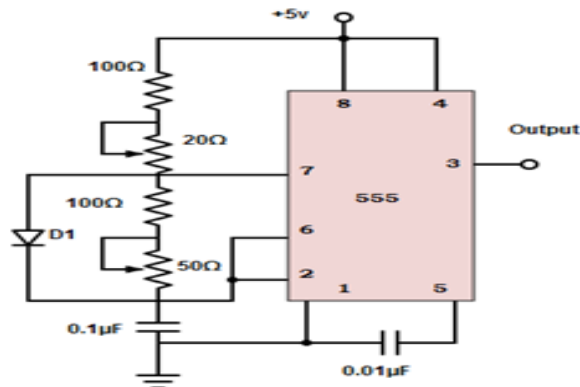
1. Draw the VI characteristics of PN junction diode. CO1 - U
2. Write down the diode current equation. CO1 - U
3. Give the current voltage relationship of D-MOSFET and E-MOSFET. CO1 - U
4. A germanium transistor with $\alpha=0.98$ gives a reverse saturation current $I_{CBO}=10\mu A$ in a CB configuration. When it is used in CE configuration with a base current of $0.22\mu A$, calculate the collector current. CO2 - AP
5. A transistor is connected in CE configuration. Collector supply voltage $V_{CC}=10V$, $R_L=800\Omega$, voltage drop across $R_L=0.8V$, $\alpha=0.96$. What is base current? CO2 - AP
6. In an NPN silicon transistor, $\alpha=0.995$, $I_E=10mA$ and leakage current $I_{CBO}=0.5\mu A$. Determine I_{CEO} . CO2 - AP
7. Determine the expression for the transfer function for the circuit shown below. CO3 - AN



8. In an inverting op-amp circuit for which the gain is -4 V/V and the total resistance used is 100 k Ω . Then the value of R_1 and R_2 (negative feedback) CO3 - AN
9. For designing a non-inverting amplifier with a gain of 2 at the maximum output CO3 - AP

voltage of 10 V and the current in the voltage divider is to be 10 μ A the resistance required are R1 and R2 where R2 is used to provide negative feedback.

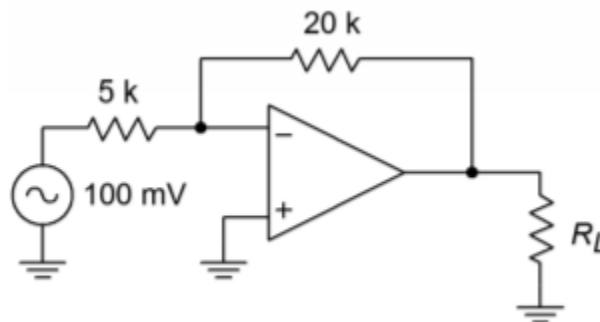
10. List the different types of comparators. CO4 - AP
11. Draw a circuit for converting a square wave into a series of positive pulses. CO4 - AP
12. List out the applications of comparator. CO4 - AP
13. Determine time period of linear ramp generator using the specifications $R_E = 2.7k\Omega$, $R_1 = 47k\Omega$, $R_2 = 100k\Omega$, $C = 0.1\mu F$, $V_{CC} = 5V$. CO5 - CR
14. Astable multivibrator operating at 150Hz has a discharge time of 2.5ms. Find the duty cycle of the circuit. CO5 - CR
15. Determine the frequency and duty cycle of a rectangular wave generator. CO5 - CR



PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Derive the construction of PN junction diode. Explain the forward and reverse characteristic of PN junction diode and obtain its VI characteristic curve. CO1- App (10)
17. For a BJT, the common – base current gain $\alpha = 0.98$ and the collector base junction reverse bias saturation current $I_{CO} = 0.6\mu A$. This BJT is connected in the common emitter mode and operated in the active region with a base drive current $I_B = 20 \mu A$. Calculate the collector current I_C for this mode of operation. CO2- App (10)
18. Determine the input impedance and output voltage for the circuit in figure below. CO3- App (10)



19. Design a monostable multivibrator with trigger pulse shaping which will drive a LED on for 0.5 second each time is pulsed. CO4- App (10)

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