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TM241408T

Reg. No :.....

Name :.....

MASTER'S DEGREE (C.S.S) EXAMINATION, NOVEMBER 2024

2024 ADMISSIONS REGULAR

SEMESTER I - CORE COURSE

PH1C04TM20 - Electronics

Time : 3 Hours **Maximum Weight : 30**

Part A

I. Answer any Eight questions. Each question carries 1 weight. **(8x1=8)**

1. Draw the block diagrams of four types of feedback amplifier configurations.
2. How a voltage follower can be constructed from a non inverting amplifier?
3. What is error voltage in the op amp? How can it be reduced?
4. Explain the difference between inverting and differential summing amplifiers.
5. How does the high frequency model of an op-amp differ from the equivalent circuit of an op-amp? How do we account for the change?
6. Distinguish between a triangular wave and a saw tooth wave.
7. What are all pass filters? Where and why is it needed?
8. Give the limitations of op-amps as comparators.
9. Name and then briefly describe one application of V/F and F/V converters.
10. What is Amplitude modulation?

Part B

II. Answer any Six questions. Each question carries 2 weight **(6x2=12)**

11. How voltage series feedback affect the voltage gain and input resistance of an op amp.
12. Compare the positive and negative feedback in op amps. Why negative feedback is desirable in amplifier appications.
13. Find the maximum possible output offset voltage VOO due to Vio for the LM307 op amp with Vio= 10mV dc , RF=10 kΩ and R1=1 kΩ.
14. For transducer bridge type instrumentation amplifier R1= 1kΩ, RF= 4.7kΩ, RA=RB=RC=100kΩ, Vdc= +5V and supply voltages = ± 15V. The transducer is a thermistor with the specifications, RT=100kΩ at reference temperature 25oC, temperature coefficient of resistance =-1kΩ/Co. Determine the output voltage at0Co and 1000C0.
15. Discuss the high frequency equivalent circuit of an op-amp and using that draw the frequency response of IC 741.
16. Calculate the frequency of the triangular wave generated with R2= 1.2kΩ, R3= 6.8kΩ, R1= 120kΩ and C1= 0.01μF and draw its circuit diagram.
17. Draw the schematic diagram of a peak detector and explain its operation.
18. Discuss a sample and hold circuit and briefly explain its operations.

Part C

III. Answer any Two questions. Each question carries 5 weight **(2x5=10)**

19. What are the two differential amplifier configurations? Compare and contrast these Configurations.
20. Explain the input bias current and design of offset minimizing resistor.
21. Derive the open loop voltage gain of an op-amp as a function of frequency.

22. Explain the working of an AM diode detector with automatic gain control.