QP CODE: 24806173

24806173

Reg No : .....

Name : .....

INTEGRATED MSC DEGREE EXAMINATION, DECEMBER 2024

Fifth Semester

INTEGRATED MSC BASIC SCIENCE-PHYSICS

CORE - IPH5CR05 - LINEAR INTEGRATED CIRCUITS

2021 Admission Onwards

8C172C73

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Op-amp is popular. Comment.
2. Define output impedance of Op-amp.
3. Define open loop gain of Op-amp.
4. What is feedback in the context of operational amplifiers?
5. How does voltage shunt feedback affect the output impedance of the amplifier?
6. Draw the circuit of comparator.
7. What type of feedback network is used in a Wien Bridge Oscillator?
8. Define VCO.
9. Name the most commonly used filters.
10. How does an op-amp notch filter differ from a band-pass filter?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. For the inverting amplifier if the input voltages are 2V, 4V and 6V and corresponding resistances are 2K, 4K and 6K respectively and feed back resistor is 3K. Calculate the output voltage.
12. What is voltage follower? Explain it in detail.
13. Provide a practical example of a non-inverting amplifier circuit using the virtual ground concept.
14. Draw the diagram of integrator and differentiator circuit.

15. Draw the diagram of integrator and adder circuit.

16. Explain the concept of multivibrator.

17. Draw the neat diagram of monostable multivibrator using external connection and explain it in detail.

18. With a neat diagram of astable multivibrator deduce the formula for frequency.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Explain the working of non-inverting summer with neat circuit diagram.

20. Discuss how negative feedback affects the input resistance of an op-amp circuit. Provide a step-by-step derivation of the input resistance with feedback for a non-inverting amplifier configuration. Explain the practical implications of this change in input resistance in op-amp circuits.

21. With the help of a circuit diagram and associated wave forms describe the working of basic triangular square wave generator using op-amps.

22. Describe the circuit diagram of an active bandpass filter using an op-amp. Explain the role of each component in the circuit and how they contribute to the filter's frequency response.

(2×5=10 weightage)