

19002639



Reg. No.....

Name.....

**M.Sc. DEGREE (C.S.S.) EXAMINATION, OCTOBER 2019**

**First Semester**

Faculty of Science

Branch II : Physics (A)—Pure Physics

PHI C04—ELECTRONICS

(2012—2018 Admissions)

Time : Three Hours

Maximum Weight : 30

**Part A**

*Answer any six questions.*

*Each question carries 1 weight.*

1. Differentiate closed loop and open loop voltage gain.
2. Draw the circuit diagram of op amp inverter. List its applications and characteristics
3. Briefly explain the difference between the dc and ac amplifiers.
4. Define(a) thermal drift (b) CMRR.
5. Draw the high frequency op amp equivalent circuit.
6. What do you meant by slew rate ?
7. Write short notes on compensating circuits.
8. Explain about VCO.
9. List the applications of IC 565.
10. What do you meant by phase discriminators ?

(6 × 1 = 6)

**Part B**

*Answer any four questions.*

*Each question carries 2 weight.*

11. Design a non-inverting amplifier circuit with the voltage gain of 6 dB and cut off frequency 1 KHz.
12. Design a scaling amplifier circuit that will amplify the first input by a factor of 2 and the second by a factor of 3. Use inverting configuration for the scaling amplifier.
13. Draw the circuit diagram of triangular wave generator, draw its output waveforms and explain its working.

**Turn over**





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14. Design a square wave generator with the help of op amp with 40 % duty cycle.
15. Explain the working of super heterodyne receiver.
16. Differentiate between AM receivers and FM receivers.

(4 × 2 = 8)

### Part C

*Answer all questions.*

*Each question carries 4 weight.*

17. (a) With the help of suitable diagrams explain the working of inverting and non inverting amplifier. Compare the characteristics of inverting and non inverting amplifiers

*Or*

- (b) Derive the various expressions for differential amplifier for two op amps.

18. (a) Explain the various characteristics of op amp.

*Or*

- (b) What do you mean by integrator? Explain its application. Design a integrator to integrate an input signal that varies in frequency from 10Hz to about 1KHz.

19. (a) Draw the pin out diagram of Voltage Controlled Oscillator. Explain each block with the help of a block diagram.

*Or*

- (b) What are the uses and applications of filters ? Draw the circuit diagram of second order low pass butterworth filter and explain its working.

20. (a) Draw the internal architecture of IC 555 and explain any one of the application circuit.

*Or*

- (b) Explain :

- (i) PLL.
- (ii) Analog modulation.
- (iii) AGC.
- (iv) Ratio detector.

(4 × 4 = 16)

