QP CODE: 19002393

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Reg No : .....

Name : .....

M.Sc. DEGREE (C.S.S) EXAMINATION, NOVEMBER 2019

First Semester

Faculty of Science

PHYSICS

Core - PH010104 - ELECTRONICS

2019 Admission Onwards

9F15B16D

Time: 3 Hours Maximum Weight :30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Derive the gain factor of noninverting op-amp by using difference input voltage ideally zero.
2. Derive the expression for the bandwidth of noninverting op-amp with feedback.
3. Explain input offset voltage.
4. Define CMRR and explain the significance of a relatively large value of CMRR.
5. Differentiate break frequency and corner frequency.
6. Draw first order high pass filter and obtain the frequency of high pass filter
7. What are oscillators. Write down the requirements for oscillation
8. Name and then briefly describe one application of V/F and F/V converters.
9. What is a sample and hold circuit?Why it is needed?
10. Briefly explain the working of an AM receiver with block diagram.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. The following parameters are given for differential amplifier with two op-amp $R_1 = R_3 = 600\Omega, R_2 = R_4 = 6K\Omega, V_x = -1V$ and $V_y = -2V$ at 1KHz. Calculate the voltage gain, input resistance and output voltage of the amplifier (op-amp: 741C)

12. In a voltage to current converter with grounded load $V_{in} = 5V, R = 10K\Omega$ and V_1=1V. Find (a) the load current and (b) the output voltage V_0. Assume that the op-amp is initially nulled.

13. Explain the difference between the integrator and differentiator and give one application each.

14. Differentiate compensated and non compensated OPAMPS

15. Write down the principles of VCO. Give two applications that require a VCO

16. With the help of a diagram explain the working of a Zero crossing detector.

17. Design an op-amp Schmitt Trigger circuit with an upper triggering voltage 0.5V and lower triggering voltage -0.5V if $V_sat = 12V$.

18. Explain the application in which the IC 555 can be used as an astable multivibrator.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. With a neat diagram explain voltage series negtive feedback amplifiers and Derive an expression for its closed-loop voltage gain,input resistance and bandwidth.

20. Explain instrumentation amplifier using tranducer bridge with two applications.

21. What are active filters ? With the help of circuit diagram ,explain first order and second order low pass butter worth filter.

22. With the help of a suitable diagrams explain about the working of FM receiver.

(2×5=10 weightage)