QP CODE: 19101442

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Reg No : ....

Name : ....

B.Sc DEGREE (CBCS) EXAMINATION, MAY 2019

Fourth Semester

B.Sc Physics Model II Applied Electronics

Vocational Course - AE4VOT07 - LINEAR INTEGRATED CIRCUITS

2017 Admission onwards

281EDF10

Maximum Marks: 60 **Time: 3 Hours**

Part A

Answer any **ten** questions.

Each question carries **1** mark.

1. How IC 741 has got the name Operational Amplifier?
2. Why the op-amp input terminals are named as inverting and non-inverting inputs?
3. Why in frequency response curve frequency is plotted on a logarithmic scale?
4. Draw the diagram of non-inverting adder.
5. Draw the diagram of differentiator.
6. What is Colpitt's oscillator?
7. What is the significance of the name relaxation oscillator?
8. Distinguish between passive and active filters.
9. Explain controlled voltage and discharge of IC-555.
10. Draw the functional diagram of IC-555.
11. Draw the output wave form of the Schmitt trigger.
12. What are the three states of PLL?

(10×1=10)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Define CMRR. A differential dc amplifier has a differential mode gain of 100 and a common mode gain 0.01. What is its CMRR in dB?
14. Explain open loop voltage gain. With the help of circuit diagram explain open loop inverting amplifier.
15. For the inverting amplifier given that R1=1kΩ and Rf=10kΩ. Assuming an ideal amplifier, calculate the output voltage for the input of 1V.

16. For the non-inverting amplifier given that input voltage is 3V and $R1=1k\Omega$ and $Rf=10k\Omega$. Calculate the output voltage.

17. With a neat diagram explain the comparator using an Op-amp.

18. Design a Wein bridge oscillator using Op-amp for f_0 = 1005HZ.

19. Draw the circuit diagram and explain the working of monostable multivibrator using IC555.

20. What is the function of phase detector in PLL? Explain the function of Exclusive-OR phase detector with suitable diagrams and waveforms.

21. What is the function of low-pass filter in PLL? Define lock range, capture range and pull-in-time.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **10** marks.

22. Draw the circuit diagram and explain the working of differential amplifier using Op-amp. Also derive the equation for output voltage.

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

24. Draw the circuit diagram of band pass filter and block diagram of notch filter. Explain the working of both filters using frequency response curves.

25. With a neat diagram, explain astable multivibrator using IC-555.

(2×10=20)