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**Question Paper Code: 34402**

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Fourth Semester

Electronics and Communication Engineering

01UEC402 – ANALOG CIRCUITS

(Regulation 2013)

Duration: 1:45 hour

Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

**(Answer any ten of the following questions)**

1. What are the essential conditions for maintaining oscillations in a circuit?
2. A certain *X*-cut quartz crystal resonates at 500 kHz. It has equivalent inductance of 4.2 *H* and an equivalent capacitance of 0.03 *pF*. If its equivalent resistance is 500  $\Omega$ , calculate the Q-factor.
3. Define duty cycle *D*.
4. What is a multi-vibrator? How are they classified?
5. List the limitations of integrated circuits.
6. Define slew rate.
7. Draw the circuit of a voltage to current converter with floating load.
8. Define capture range, lock-in range and pull-in-time of a PLL.
9. List the various A/D conversion techniques.

10. What are the modes of operation of a timer?
11. List out the advantages of ICs over discrete components.
12. List the applications of PLL.
13. Give the schematic of Op-Amp based sine wave to square wave converter.
14. Design a monostable multivibrator for a pulse width of 10 *ms* by using IC 555.
15. Define resolution of a converter.

PART – B (3 x 10= 30 Marks)

**(Answer any three of the following questions)**

16. Explain in detail the construction and working principle of RC phase shift oscillator and derive the expression for frequency of oscillation in it. (10)
17. Sketch a Schmitt trigger and explain its operation with necessary diagram. (10)
18. Explain in details the step by step procedure for manufacturing process of monolithic bipolar transistor. (10)
19. Draw and explain the operation of phase shifter circuit with necessary expressions. (10)
20. Explain the single and dual slope type ADC with neat block diagrams. (10)