KATHMANDU UNIVERSITY
End Semester Examination
January/February, 2024

Level : B.E
Year : II
Time : 2 hrs. 30 mins.

01 FEB 2024

Course : EEEG 214
Semester : II
F. M. : 40

SECTION "B"
[5Q. × 8 = 40 marks]

Attempt *ANY FIVE* questions. Assume suitable data if necessary, Symbol has their usual meaning.

1.
a. Derive and discuss the expression for the feedback system. Also, explain Barkhausen Criteria.
b. Derive the expression of oscillation frequency and feedback gain for RC bridge oscillator.

2.
a. Explain the free running oscillator using transistor circuit, also derive the expression for frequency generation.
b. Discuss the operation of full wave precision rectifier.

3.
a. What is phase locked loop? List a few applications of PLL. Explain any one application in detail.
b. Design an active low pass filter having cut-off frequency of 2 kHz with phase and magnitude plot.

4.
a. Derive the expression for maximum fan-out for RTL inverter logic.
b. Analyze the circuit of DTL circuit and mention two reasons behind the modification of DTL circuit.

5.
a. What are the major steps of the planner process? Discuss the crystal growth in Czochralski process and wafer preparation.
b. Fabricate the passive components in a single wafer.

6.
a. Explain working principle of 555 timer circuit with the help of its internal blocks.
b. Discuss the LC tank circuit. Derive the expression for Colpitts oscillator