



Daffodil International University
Department of Electrical and Electronic Engineering, Faculty of Engineering
Mid-Term Examination, Summer- 2026

Course Code: 0714-221

Course Title: Electronics II

Section: All

Level-Term: L2-T2

Full Marks: 25

Date: July-04, 2026

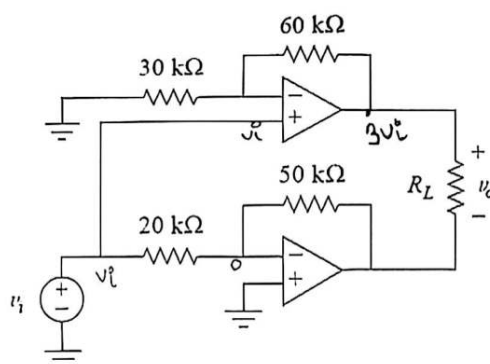
Teacher's Initial: SR

Time: 1.5 Hours

Answer all of the below questions

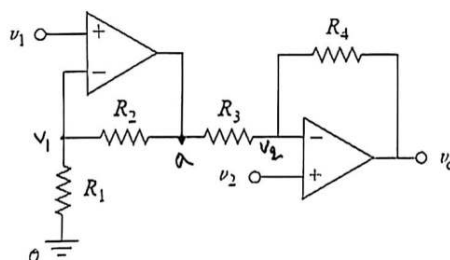
Q1. **Design** an Automatic Street lamp circuit using Op-Amp (as comparator) and using LDR (as light sensor). And explain its operation mathematically. (At night lamp will automatic on and at day automatically off) **CO-1** 05
C (3)

Q2. **Analyze** the below bridge amplifier circuit and determine the voltage gain $\frac{v_o}{v_i}$. **CO-2** 05
C (4)

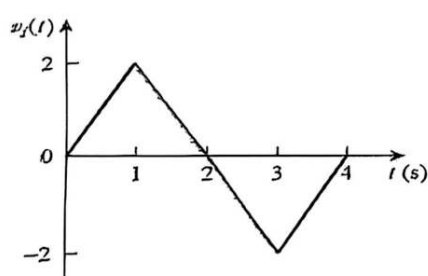


Q3. **Design** an analog computer circuit using Op-Amp to solve the below differential equation $3 \frac{d^2 v_i}{dt^2} + 4 \frac{dv_i}{dt} + 7 \int v_i + 5v_i = v_o$, Where v_o is the output and v_i is the input signal. **CO-1** 05
C (3)

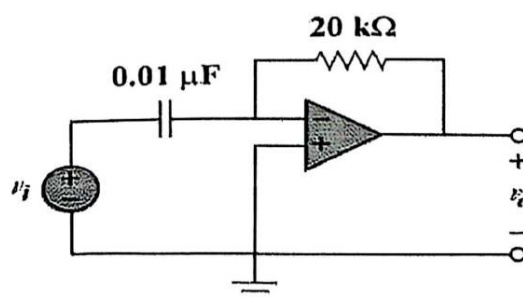
Q4. **Analyze** the below instrumentation amplifier circuit and derive an expression for v_o in terms of v_1 and v_2 . Describe how can this circuit be used as a subtractor? **CO-2** 05
C (4)



Q5. The triangular waveform in Fig. (a) is applied to the input of the op amp differentiator in Fig. (b). **Calculate** the output and **Show** the output waveform. **CO-1** 05
C (3)



(a)



(b)