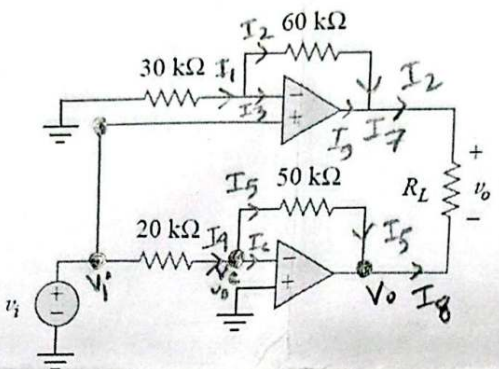
Daffodil International University
Department of Electrical and Electronic Engineering, Faculty of Engineering
Mid-Term Examination, Summer– 2026

Course Code: 0714-221	Course Title: Electronics II	
Section: All	Level-Term: L2-T2	Teacher's Initial: SR
Full Marks: 25	Date: July-04, 2026	Time: 1.5 Hours

Answer all of the below questions

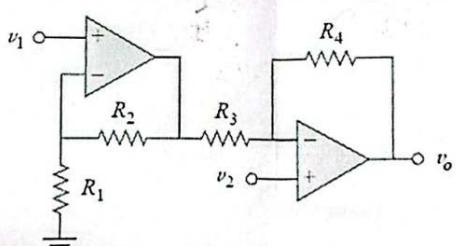
Q1. **Design** an Automatic Street lamp circuit using Op-Amp (as comparator) and using LDR (as light sensor). And explain its operation mathematically. (At night lamp will automatic on and at day automatically off) — **CO-1 C (3)** — **05**

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

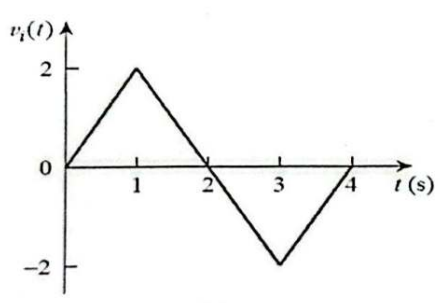


Q3. **Design** an analog computer circuit using Op-Amp to solve the below differential equation $3\frac{d^2v_i}{dt^2}+4\frac{dv_i}{dt}+7\int v_i + 5v_i = v_0$, Where v_o is the output and v_i is the input signal. — **CO-1 C (3)** — **05**

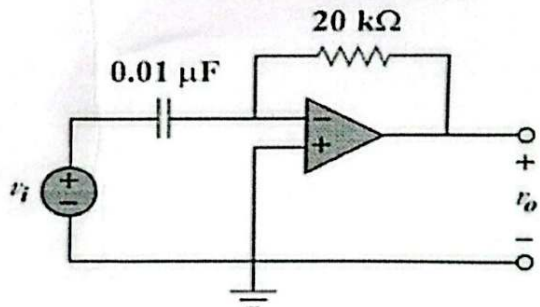
Q4. **Analyze** the below instrumentation amplifier circuit and derive an expression for v_o in terms of v_1 and v_2. Describe how can this circuit be used as a subtractor? — **CO-2 C (4)** — **05**



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 C (3)** — **05**



(a)



(b)