



**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

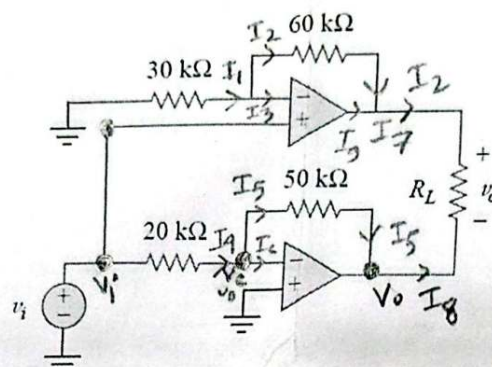
Date: July-04, 2026

Teacher's Initial: SR

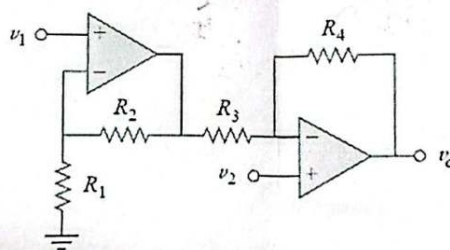
Time: 1.5 Hours

**Answer all of the below questions**

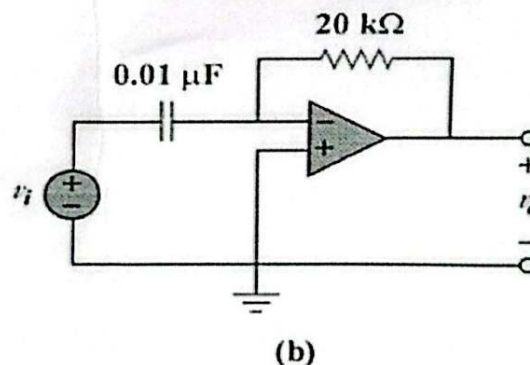
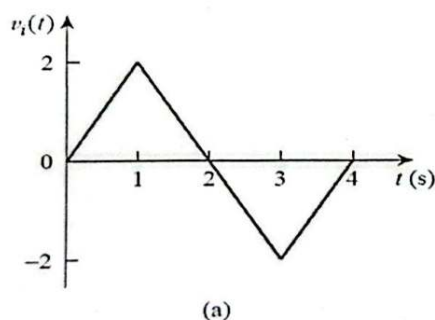
- Q1. Design an Automatic Street lamp circuit using Op-Amp (as comparator) and using LDR (as light sensor). And explain its operation mathematically. (At night lamp will automatic on and at day automatically off) CO-1 05  
C (3)
- Q2. Analyze the below bridge amplifier circuit and determine the voltage 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)



$$-4 \times 10^{-4}$$