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Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

Midterm Examination, Fall-2026

Course Code: 0714-221 | Course Title: Electronics-II

Section: : A,B,C,D,E,F,G | Level-Term: L2-T2 | Teacher's Initial: MH , RS , MMJ

Full Marks: 25 | Exam Date: October 31, 2026 | Time: 1.5 Hours

[Note: Answer all the questions. CO's represent one of the learning outcomes of the course. Figure on the right hand side indicate marks allocated for the question]

Q1. Explain the working of the op-amp circuit in Figure 1 as a Pulse Width Modulator (PWM). Using this explanation, determine V_s, V_s', V_k and ω so that the given output waveform is obtained. (From Figure1) CO-1 (C2) [5]

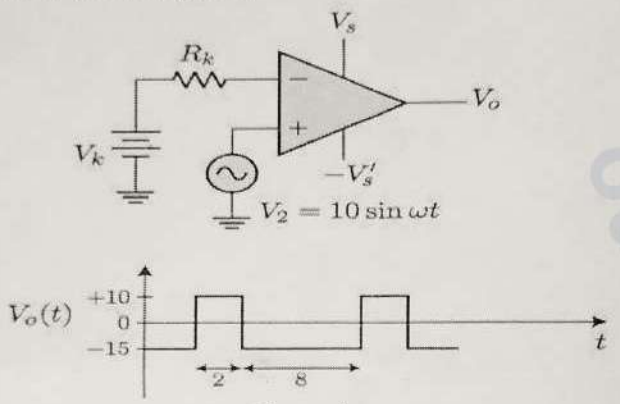


Figure 1

Q2. Calculate Output voltage of this circuit.(From Figure-2) CO-2 C(2) [5]

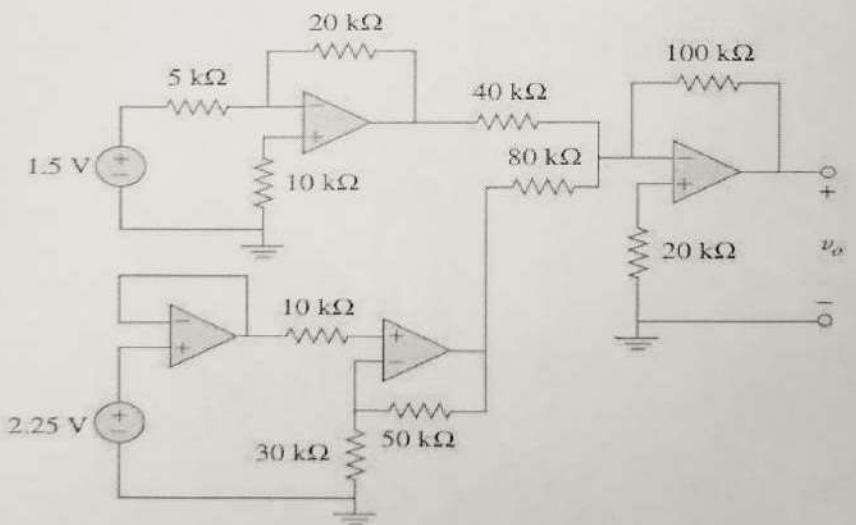


Figure 2

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Q3. **Calculate** Voltage gain for the circuit below. (From Figure-3) CO-2 C(2) [5]

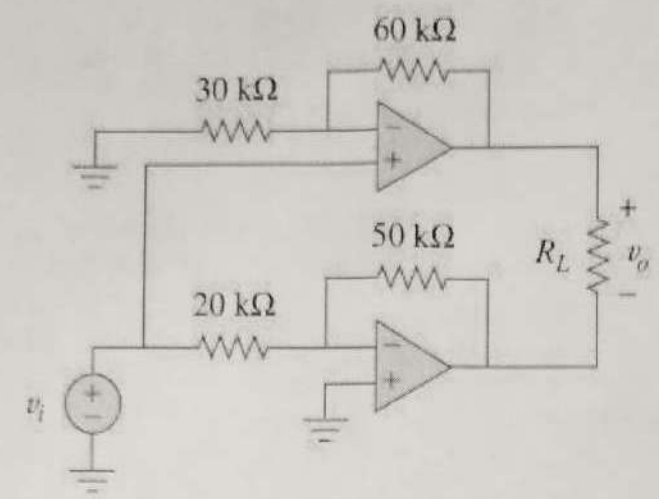
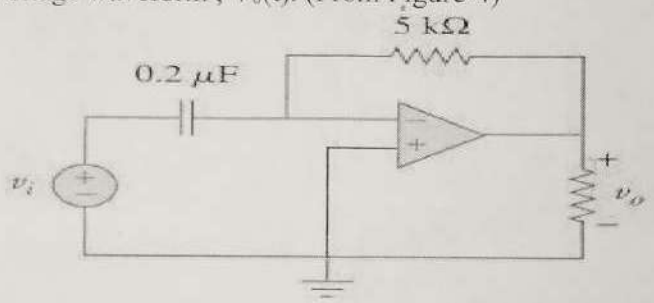


Figure 3

Q4. **Draw** the output voltage waveform , $V_0(t)$. (From Figure-4) CO-2 C(2) [5]



(a)

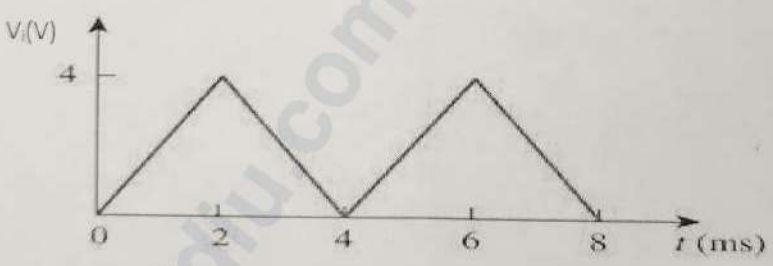


Figure 4

Q5. **Design** a closed-loop op-amp circuit to implement the equation CO-2 C(2) [5]

$$3\frac{d^2V_o}{dt^2} - 5\frac{dV_o}{dt} + 2V_o = 4V_i$$