

ECE 201 – Spring 2009

Final Exam

May 4, 2009

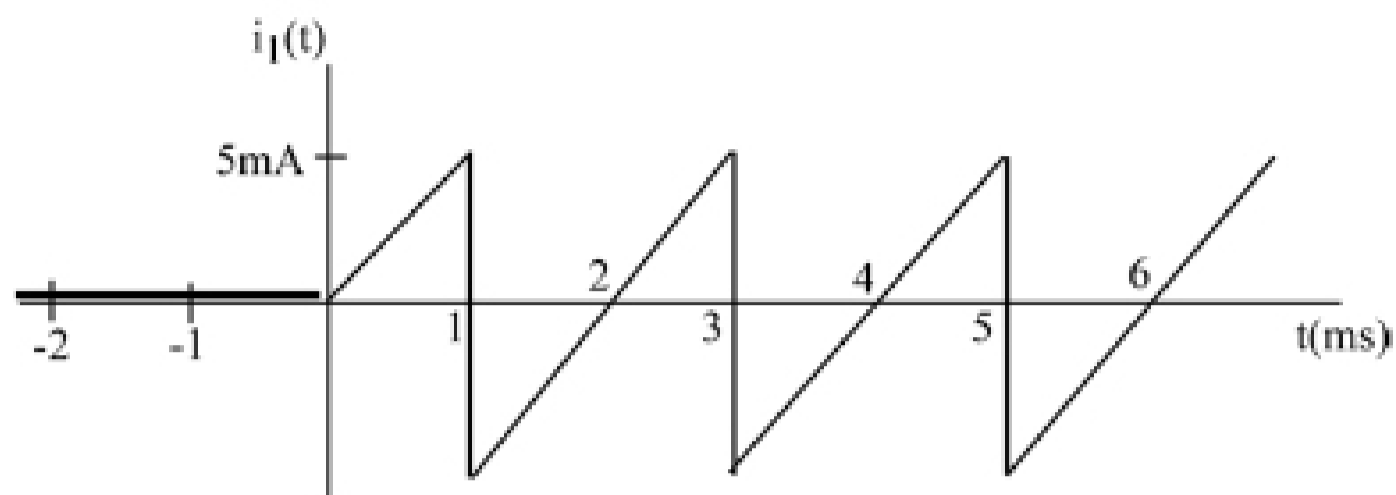
Division 0101: Elliott (9:30am)
Division 0201: Capano (10:30 pm)
Division 0301: Jung (11:30 pm)
Division 0401: Capano (3:30 pm)

Instructions

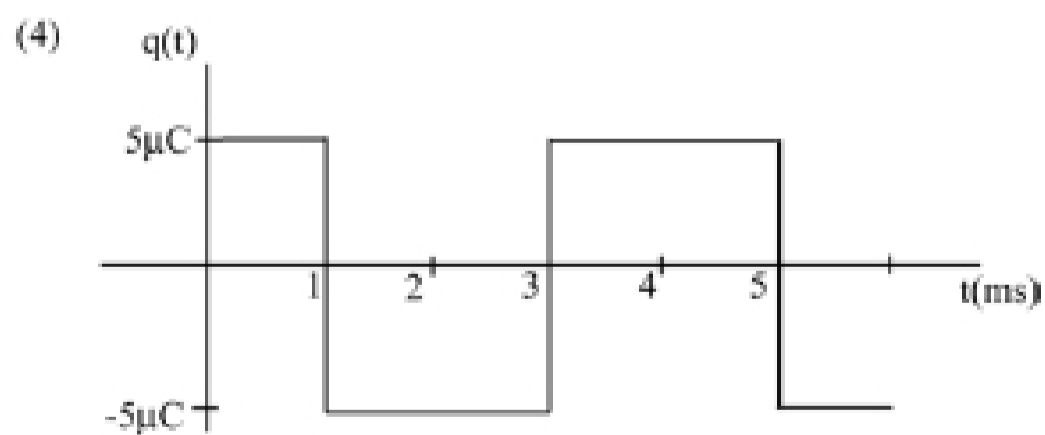
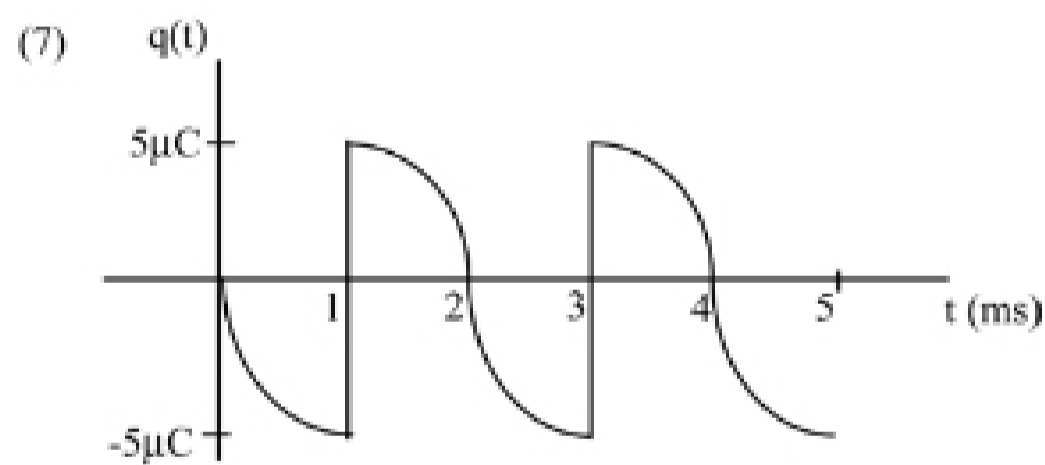
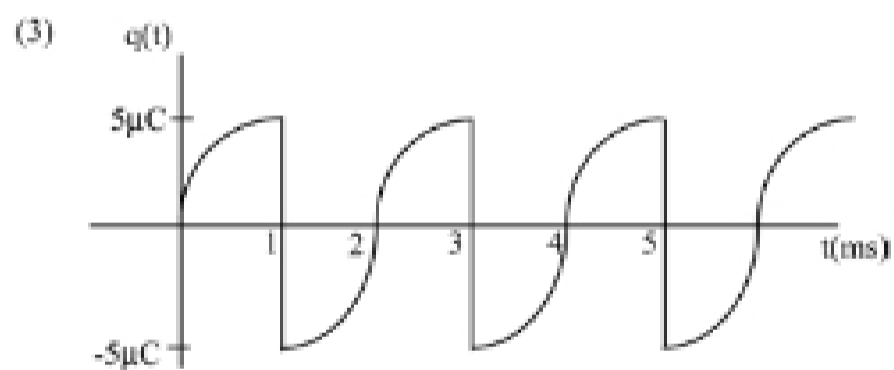
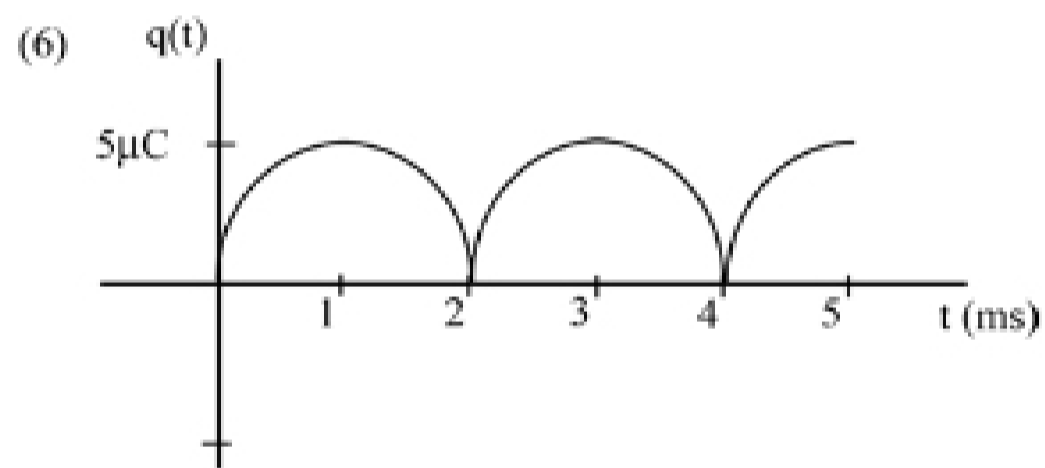
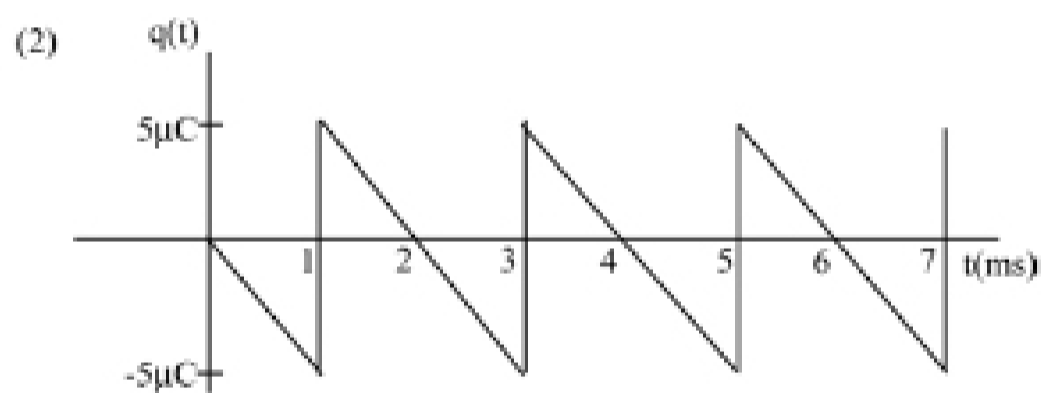
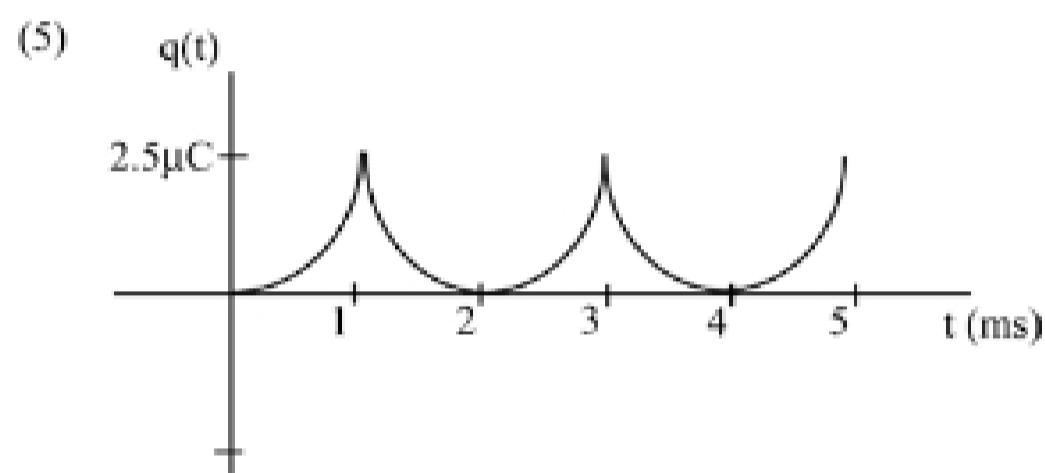
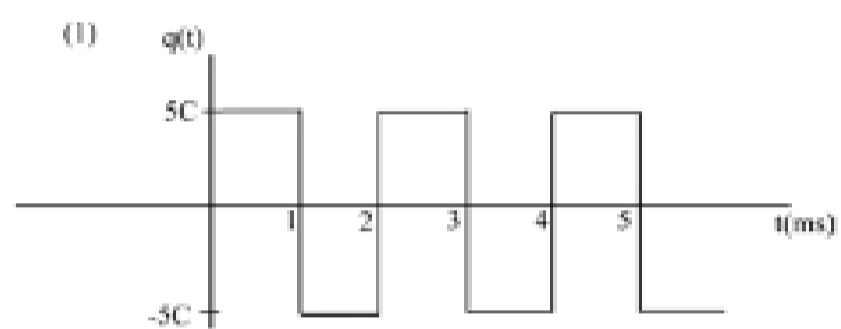
1. DO NOT START UNTIL TOLD TO DO SO.
2. Write your Name, division, professor, and student ID# (PUID) on your scantron sheet.
3. This is a CLOSED BOOKS and CLOSED NOTES exam.
4. There is only one correct answer to each question.
5. Calculators are allowed (but not necessary). Please clear any formulas, text, or other information from your calculator memory prior to the exam.
6. If extra paper is needed, use back of test pages.
7. Formulas are given on the final page of this exam.
8. Cheating will not be tolerated. Cheating in this exam will result in an F in the course.
9. If you cannot solve a question, be sure to look at the other ones and come back to it if time permits.
10. As described in the course syllabus, we must certify that every student who receives a passing grade in this course has satisfied each of the course outcomes. On this exam, you have the opportunity to satisfy all outcomes. (See the course syllabus for a complete description of each outcome.) On the chart below, we list the criteria we use for determining whether you have satisfied these course outcomes. You only need to satisfy the outcomes once during the course, so any outcomes that you satisfied previously will remain satisfied, independent of your performance on this exam.

Course Outcome	Exam Questions	Minimum correct answers required to satisfy the course outcome
i	1, 2, 11-13	2
ii	2, 12, 15	1
iii	3, 4, 6, 9, 14, 16	3
iv	5-7	1
v	11-17	3
vi	18-21	2
vii	20-22	1
viii	23	1
ix	8-10	1

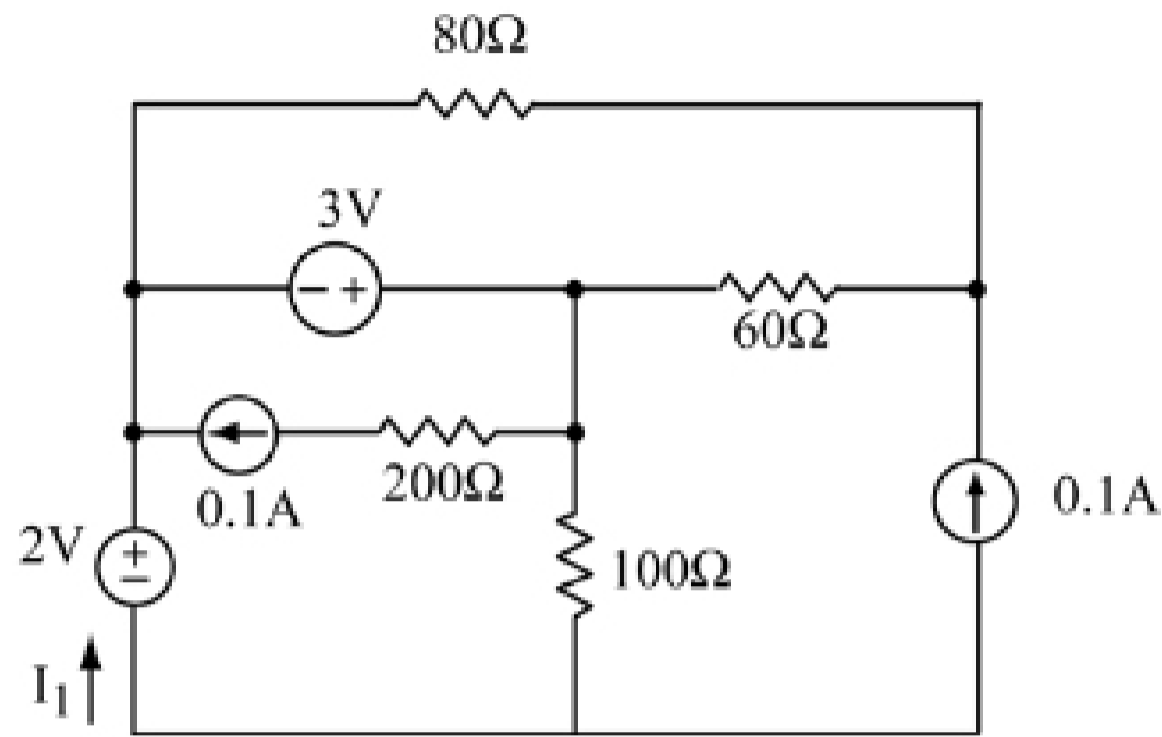
1. The current $i_1(t)$ flowing through a wire is shown.



Determine the total charge $q(t)$ conducted past a point along this wire. Assuming $q(0) = 0$, which of the following plots best represents this charge?

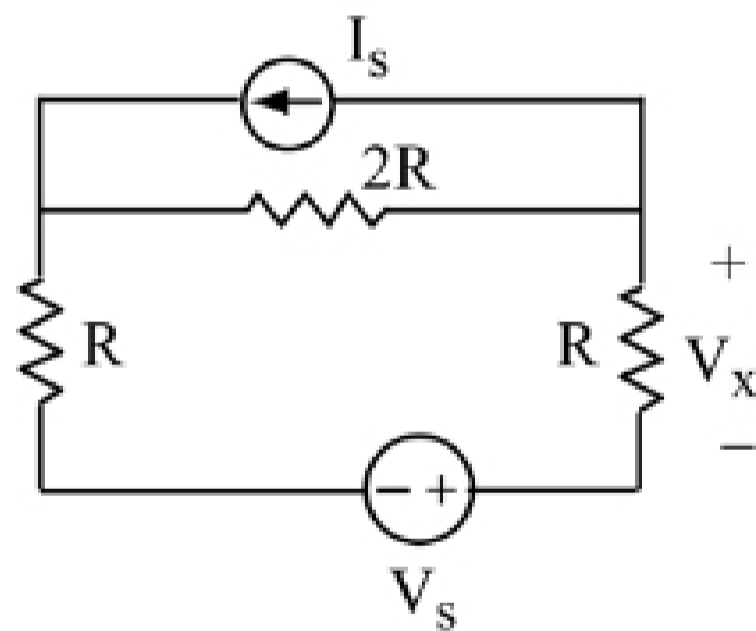


2. Find I_1 for the circuit shown below. [Hint: Draw a Gaussian surface on the circuit.]



- (1) 0.05 A (2) -0.05 A (3) 0.1 A
 (4) -0.1 A (5) 0.15 A (6) -0.15 A
 (7) 0.2 A (8) -0.2 A

3. Find the coefficients A and B, where $V_x = AI_s + BV_s$.



- (1) $A = -0.5R; B = -0.25$ (2) $A = -R; B = 0.25$
 (3) $A = 2R; B = -0.25$ (4) $A = 0.5; B = R$
 (5) $A = 0.5R; B = -0.25$ (6) $A = -2R; B = 0.5$
 (7) $A = 1; B = 1$