Physics 1111
Exam #1 2:30-C Solutions

Instructions:

This is a closed-book, closed-notes exam. You will be given a separate sheet of formulas and numerical data that you may consult. **Nothing written on the formula sheet will be graded.**

There is space after each question to show your work; if you need more space, you may use the back of the page, or request more paper. Please clearly indicate where your work for each problem is. Underline or draw a box around your final answer.

The exam consists of five sections. I recommend that you read all the questions at the start so that you can allocate your time wisely.

You may use a scientific calculator for arithmetic only; your calculator must be *non-graphing, non-programmable, and non-algebraic*. You are not allowed to share your calculator.

The use of cell phones, PDAs, or any other electronic devices (besides calculators) is forbidden. All such gadgets must be *turned off and put away* throughout the exam.

- **Do not open the exam until told to begin.**
- You have one class period (50 minutes) to finish the exam.
- Make sure *every page* of the exam has your last name.
- You *must* provide explanations and/or show work *legibly* to receive full credit for Parts III–V.
- Make sure that your answers include appropriate units and significant digits.
- Assume that air resistance is negligible, unless otherwise stated.

By signing below, you indicate that you understand the instructions for this exam and agree to abide by them. You also certify that you will personally uphold the university's standards of academic honesty for this exam, and will not tolerate any violations of these standards by others. **Unsigned exams will not be graded.**

Signature: _____

UGA ID (81x) #: _____ **Row/Seat:** _____

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8 February 2019

Last Name: _____

Part	I	II	III	IV	B	Total Score	Grade
Score	/12	/27	/40	/21		/100	/100

I: Multiple-Choice Questions (12 points)

For each question below, choose the **single best** response and write the corresponding **capital letter** in the box provided. There is no penalty for guessing.

1. Marie wants to kayak across a river. The current flows from north to south at speed v, and Marie can paddle at a speed $2v$ in still water. In what general direction should she head to cross the river to the east bank in the least amount of time?

B

A. North of East.
B. Due East.
C. South of East.
D. The three directions take the same amount of time.

2. A kicker kicks a football from ground level at the 10-yard line to the 50-yard line. Where along the trajectory is the football's speed a minimum?

C

A. At the 50-yard line, just before the football lands.
B. At the 40-yard line.
C. At the 30-yard line.
D. At the 20-yard line.
E. At the 10-yard line, just after the football leaves the kicker's foot.
F. The speed is the same throughout.

3. A car's brakes produce a constant-magnitude acceleration. For some initial speed, the stopping distance of the car is d. If the initial speed doubles, what will be the new stopping distance?

D

A. $d/2$
B. d
C. $2d$
D. $4d$
E. $8d$

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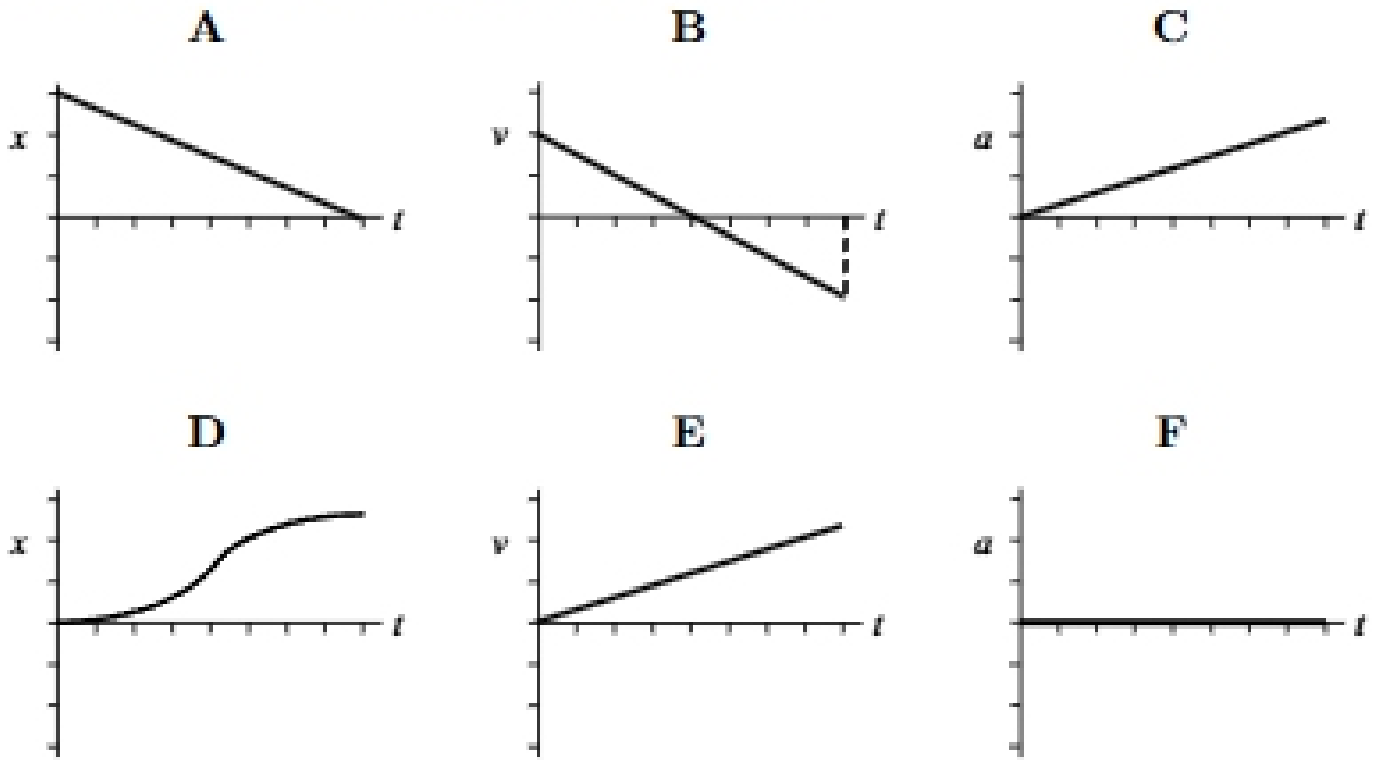
II: Order/Choice Questions (27 points)

For each question below, write your responses in **capital letters** in the space provided.

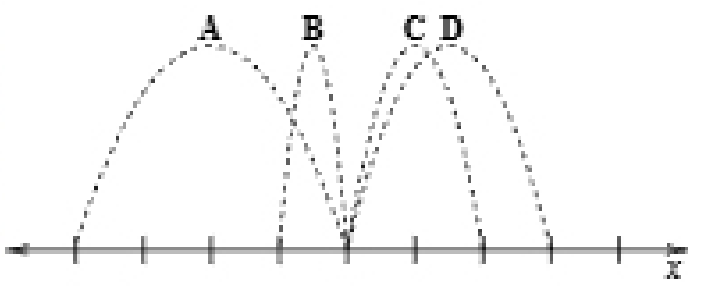
1. Each of the graphs below shows position, velocity, or acceleration plotted versus time, for an object in motion along a straight line.



In the space provided, identify in **capital letters** *all graphs* meeting the stated condition. Write "none" if no graphs satisfy the condition.

(a) Velocity is constant.	A, F
(b) Acceleration is constant.	A, B, E, F
(c) Total displacement is zero over the time interval shown.	B
(d) Velocity reverses direction.	B
(e) Velocity increases over the whole time interval shown.	C, E

2. Four projectiles are launched with different initial speeds so that they reach the same maximum height, as shown. Rank the trajectories in order of *increasing* initial speed. Be sure to note if any of the initial speeds are equal. Use less-than symbols and equals signs ($<$, $=$) to indicate rankings.



B <C <D <A