AP Physics C: Mechanics Exam

Regularly Scheduled Exam Date: Monday afternoon, May 4, 2020
Late-Testing Exam Date: Wednesday morning, May 20, 2020

**Section I**
- **Total Time:** 45 minutes
- **Calculator Allowed:**
- **Number of Questions:** 35
  *(The number of questions may vary slightly depending on the form of the exam.)*
- **Percent of Total Score:** 50%
- **Writing Instrument:** Pencil required

**Section II**
- **Total Time:** 45 minutes
- **Calculator Allowed:**
- **Number of Questions:** 3
- **Percent of Total Score:** 50%
- **Writing Instrument:** Pen with black or dark blue ink, or pencil

**Note:** A four-function, scientific, or graphing calculator may be used on all sections of the AP Physics C: Mechanics Exam. See pages 51–55 of Part 2 of the 2019-20 AP Coordinator’s Manual for details about the calculator policy.

**Before Distributing Exams:** Check that the title on all exam covers is *Physics C: Mechanics*. If there are any exam booklets with a different title, contact the AP coordinator immediately.

This exam does not have a scheduled break between Section I and Section II.

**What Proctors Need to Bring to This Exam**
- Exam packets
- Answer sheets
- The personalized AP ID label sheet for each student taking the exam
- Part 2 of the 2019-20 AP Coordinator’s Manual
- This book—2019-20 AP Exam Instructions
- AP Exam Seating Chart template
- Extra calculators
- Extra rulers or straightedges
- Pencil sharpener
- Container for students’ electronic devices (if needed)
- Extra No. 2 pencils with erasers
- Extra pens with black or dark blue ink
- Extra paper
- Stapler
- Watch
- Signs for the door to the testing room
  - “Exam in Progress”
  - “Phones of any kind are prohibited during the test administration, including breaks”
Tables containing equations commonly used in physics are included in each AP Exam booklet, for use during the entire exam. Students are not allowed to bring their own copies of the equation tables to the exam room.

Students may take both Physics C exams, Mechanics only, or Electricity and Magnetism only. The Mechanics exam is administered first, after which students taking both exams are given a break. Then the Electricity and Magnetism exam is administered. Prior to the regularly scheduled testing day, determine which exams students are taking. Those taking both Physics C exams and those taking Physics C: Mechanics only should report for the 12 noon start time (11 a.m. in Alaska). Those taking Electricity and Magnetism only should report to the testing room after the break at approximately 2 p.m. (1 p.m. in Alaska). If all students are taking Electricity and Magnetism only, you must not begin the regularly scheduled exam before 2 p.m. (If administering Electricity and Magnetism during the late-testing administration, follow the schedule for late testing.)

The two exams are in separate exam packets, and require separate answer sheets. At the beginning of the session, you will distribute only the packets and answer sheets for Mechanics. The materials for Electricity and Magnetism will be distributed after the break.

**Calculator Use**

Students are permitted to use rulers, straightedges, and four-function, scientific, or graphing calculators for this entire exam (Sections I and II). Before starting the exam administration, make sure each student has an appropriate calculator, and any student with a graphing calculator has a model from the approved list on page 55 of Part 2 of the 2019-20 AP Coordinator’s Manual. If a student does not have an appropriate calculator or has a graphing calculator not on the approved list, you may provide one from your supply. If the student does not want to use the calculator you provide or does not want to use a calculator at all, they must hand copy, date, and sign the release statement on page 54 of Part 2 of the 2019-20 AP Coordinator’s Manual.

During the administration of Section II, students may have no more than two calculators on their desks. Calculators may not be shared. Calculator memories do not need to be cleared before or after the exam. Students with Hewlett-Packard 48–50 Series and Casio FX-9860 graphing calculators may use cards designed for use with these calculators. Proctors should make sure infrared ports (Hewlett-Packard) are not facing each other. Since graphing calculators can be used to store data, including text, proctors should monitor that students are using their calculators appropriately. Attempts by students to use the calculator to remove exam questions and/or answers from the room may result in the cancellation of AP Exam scores.

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**SECTION I: Multiple Choice**

Before starting the exam administration, make sure each student has an appropriate calculator for the exam. See details in the section above.

› Do not begin the exam instructions below until you have completed the General Instructions.

This exam includes survey questions. The time allowed for the survey questions is in addition to the actual test-taking time.

Make sure that you administer the exam on the scheduled date and begin the exam at the designated time. Remember, you must complete a seating chart for this exam. See pages 286–287 for a seating chart template and instructions. See Part 2 of the 2019-20 AP Coordinator’s Manual for exam seating requirements (pages 57–60).
If you are giving the regularly scheduled exam, say:
It is Monday afternoon, May 4, and you will be taking the AP Physics C:
Mechanics Exam.

If you are giving the alternate exam for late testing, say:
It is Wednesday morning, May 20, and you will be taking the AP Physics C:
Mechanics Exam.

Look at your exam packet and confirm that the exam title is “AP Physics C:
Mechanics.” Raise your hand if your exam packet contains any other exam title
and I will help you.

Once you confirm that all students have the correct exam, say:
In a moment, you will open the exam packet. By opening this packet, you
agree to all of the AP Program’s policies and procedures outlined in the

You may now remove the shrinkwrap from the outside only of your exam
packet. Do not open the Section I booklet; do not remove the shrinkwrap from
the Section II materials. Put the white seals and the shrinkwrapped Section II
booklet aside.

Carefully remove the AP Exam label found near the top left of your exam
booklet cover. Place it on your answer sheet on the light blue box near the
bottom that reads “AP Exam Label.”

If students accidentally place the exam label in the space for the AP ID label or vice versa,
advise them to leave the labels in place. They should not try to remove the label; their exam
can still be processed correctly.

Listen carefully to all my instructions. I will give you time to complete each
step. Please look up after completing each step. Raise your hand if you have
any questions.

Give students enough time to complete each step. Don’t move on until all students are ready.

Read the statements on the front cover of the Section I booklet.
Sign your name and write today’s date.
Now print your full legal name where indicated.
Does anyone have any questions?

Turn to the back cover of your exam booklet and read it completely.

Give students a few minutes to read the entire back cover.

Are there any questions?

You will now take the multiple-choice portion of the exam. You should have in
front of you the multiple-choice booklet and your answer sheet. You may never
discuss the multiple-choice exam content at any time in any form with anyone,
including your teacher and other students. If you disclose the multiple-choice
exam content through any means, your AP Exam score will be canceled.

Now turn your answer sheet over to the side marked page 2. You must complete
the answer sheet using a No. 2 pencil only. Mark all of your responses on page 2
of your answer sheet, one response per question. Completely fill in the circles.
If you need to erase, do so carefully and completely. No credit will be given for
anything written in the exam booklet. Scratch paper is not allowed, but you may
use the margins or any blank space in the exam booklet for scratch work.
Your score on the multiple-choice section will be based solely on the number of questions answered correctly.

Rulers, straightedges, and calculators may be used for the entire exam. You may place these items on your desk.

Are there any questions? . . .

Then say:
You have 45 minutes for this section. Once final time is called for Section I, you will need to stop working immediately.
Open your Section I booklet and begin.

Note Start Time ___________. Note Stop Time ___________.

Check that students are marking their answers in pencil on their answer sheets and that they have not opened their shrinkwrapped Section II booklets. Make sure they’ve placed their AP ID label sheets under their chairs. Make sure that students are using their calculators appropriately. You should also make sure that Hewlett-Packard calculators’ infrared ports are not facing each other and that students are not sharing calculators.

After 35 minutes, say:
There are 10 minutes remaining.

After 10 minutes, say:
Stop working and turn to the AP Physics Survey Questions. . . .
You have 2 minutes to answer Questions 101–106. These are survey questions and will not affect your score. You may not go back to work on any of the exam questions. You may now begin.

To help you make sure students are not working on the exam questions, the two pages with the survey questions are identified with a large S on the upper corner of each page. Give students 2 minutes to answer the survey questions.

Then say:
Close your booklet and put your answer sheet faceup on your desk. Make sure you have your AP ID label and an AP Exam label on your answer sheet. Sit quietly while I collect your answer sheets.

Collect an answer sheet from each student. Check that each answer sheet has an AP ID label and an AP Exam label.

After all answer sheets have been collected, say:
Now you must seal your exam booklet using the white seals you set aside earlier. Affix one white seal to each area of your exam booklet cover marked “PLACE SEAL HERE.” Fold each seal over the back cover. When you have finished, place the booklet faceup on your desk. I will now collect your Section I booklet. . . .

Collect a Section I booklet from each student. Check that each student has signed the front cover of the sealed Section I booklet.

Proceed to Section II.
SECTION II: **Free Response**

When all Section I materials have been collected and accounted for, say:

- May I have everyone’s attention? Please get your AP ID label sheet from under your chair and place it on your desk.
- For this section of the exam you may use a pen with black or dark blue ink or a No. 2 pencil to write your responses. Does everyone have a pen or pencil?
- You may now remove the shrinkwrap from the Section II packet, but do not open the exam booklet until you are told to do so.
- Read the bulleted statements on the front cover of the exam booklet. Look up when you have finished.
- Now take an AP ID label from your label sheet and place it on the shaded box marked “Place AP ID Label Here.” If you don’t have any AP ID labels, write your AP ID in the box. Look up when you have finished.
- Read the last statement.
- Using your pen, print the first, middle, and last initials of your legal name in the boxes and print today’s date where indicated. This constitutes your signature and your agreement to the statements on the front cover.
- Now turn to the back cover and complete Items 1 through 3 under “Important Identification Information.” For Item 3, your school code is printed at the top right of your AP ID label sheet.

Give students time to complete Items 1 through 3.

- Read Item 4.
- Are there any questions?

Next, you need to collect the AP ID label sheets from students who are not taking Physics C: Electricity and Magnetism. The students who are taking Physics C: Electricity and Magnetism will keep their AP ID label sheets for that exam.

**Say:**

- I need to collect AP ID label sheets from some of you. Please listen carefully.
- If you are also taking the AP Physics C: Electricity and Magnetism Exam today, place your AP ID label sheet under your chair now.
- If you’re not taking the AP Physics C: Electricity and Magnetism Exam, leave your AP ID label sheet on your desk and I will collect it now.
- While AP ID label sheets are being collected, read the information on the back cover of the exam booklet. Do not open the booklet until you are told to do so. Look up when you have finished.

Collect the AP ID label sheets from students who are not taking the AP Physics C: Electricity and Magnetism Exam.

**Then say:**

- Are there any questions?
- Rulers, straightedges, and calculators may be used for Section II. Be sure these items are on your desk.
- You have 45 minutes to complete Section II. You are responsible for pacing yourself and may proceed freely from one question to the next. Once final time is called, you will need to stop working immediately.
You must write your answers in the exam booklet using a pen or pencil. If you use a pencil, be sure that your writing is dark enough to be easily read. If you run out of space in your exam booklet, raise your hand.

Are there any questions? . . .

Open your Section II booklet and begin.

Note Start Time _____________. Note Stop Time _____________.

Make sure that students are using their calculators appropriately. You should also make sure that Hewlett-Packard calculators’ infrared ports are not facing each other and that students are not sharing calculators.

If a student runs out of space and raises their hand, give them extra paper and instruct them to write the following on the top of each sheet they use:

- their AP ID
- the exam title, and
- the question number they are working on.

They must not write their name.

After 35 minutes, say:

There are 10 minutes remaining.

After 10 minutes, say:

Stop working and close your exam booklet. Place it faceup on your desk. . . .

If any students used extra paper for a question in the free-response section, have those students staple the extra sheet(s) to the first page corresponding to that question in their free-response exam booklets. Complete an Incident Report after the exam and return these free-response booklets with the extra sheets attached in the Incident Report return envelope (see page 281).

Then say:

Remain in your seat, without talking, while the exam materials are collected. . . .

Collect a Section II booklet from each student. Check for the following:

- Exam booklet front cover: The student placed an AP ID label on the shaded box and printed their initials and today's date.
- Exam booklet back cover: The student completed the “Important Identification Information” area.

Then say:

Remember, if you need to view your AP ID, you can do so by signing in to “My AP.” Instructions are in the 2019-20 Bulletin for AP Students and Parents. . . .

You can have one AP score report sent for free. If you haven’t already done so, it’s important that you sign in to “My AP” later to indicate the college or university that you’d like to receive your free score report. The deadline to indicate or change your free score report recipient is June 20.

If you are giving the regularly scheduled exam, say:

You may not discuss or share the free-response exam content with anyone unless it is released on the College Board website in about two days. Your AP Exam scores for this year will be available online in July.

If you are giving the alternate exam for late testing, say:

None of the content in this exam may ever be discussed or shared in any way at any time. Your AP Exam scores for this year will be available online in July.
When all exam materials have been collected and accounted for, return any electronic devices you may have collected before the start of the exam to the students who are only taking the Physics C: Mechanics Exam. Do not return devices to students who are staying to take the Physics C: Electricity and Magnetism Exam.

If no students are taking Physics C: Electricity and Magnetism, say:
You are now dismissed.

If some students are taking Physics C: Electricity and Magnetism, say:
Those of you taking Mechanics only are now dismissed.

The students taking the Electricity and Magnetism exam now get a 10-minute break. Remember that the regularly scheduled Electricity and Magnetism exam cannot begin before 2 p.m. (in Alaska: 1 p.m.), but should start before 3 p.m. (in Alaska: 2 p.m.). (For late-testing, the Electricity and Magnetism exam cannot begin before 12 p.m. local time, or 11 a.m. in Alaska, but should start before 1 p.m. local time, or 12 p.m. in Alaska.)

After the students taking Mechanics only have left, say:
If you will also be taking the Physics C: Electricity and Magnetism exam, please listen carefully to these instructions before we take a 10-minute break. Get your AP ID label sheet from under your chair and put it on your desk. You must leave your AP ID label sheet on your desk during the break. Please put all of your calculators under your chair. Your calculators and all other items you placed under your chair at the beginning of this exam must stay there. You are not permitted to open or access them in any way. You are not allowed to consult teachers, other students, notes, textbooks, or any other resources during the break. You may not make phone calls, send text messages, check email, use a social networking site, or access any electronic or communication device. You may not leave the designated break area. If you do not follow these rules, your score will be canceled. Are there any questions? . . .

You may begin your break. Testing will resume at ____________.

Make sure students understand where the designated break area is.

IMPORTANT: Both the exam room and students in the designated break area must be monitored.

At the start of the break, walk around the room to ensure all exam materials—either for Physics C: Mechanics or for Physics C: Electricity and Magnetism—are accounted for. Immediately contact the Office of Testing Integrity (OTI) if any exam materials are missing. Testing must not resume until the exam materials are located or OTI is contacted. (See contact information for OTI on the inside front cover.)

If you will be administering Physics C: Electricity and Magnetism at 2 p.m., be sure all exam materials are kept secure during the break. When the students return from break, turn to page 238 and begin the exam administration for Physics C: Electricity and Magnetism.

If you have no students taking Physics C: Electricity and Magnetism, return all exam materials to secure storage until they are shipped back to the AP Program. (See pages 24–25 of Part 2 of the 2019-20 AP Coordinator’s Manual for more information about secure storage.)
After-Exam Tasks

Return the AP ID label sheets to the AP coordinator so the label sheets can be organized for each upcoming exam administration. Keep in mind that the schedule printed on the label sheet may not reflect recent changes to a student's exam schedule. If you need to confirm a student's exam schedule, reference the AP coordinator's master exam list.

Be sure to give the completed seating chart to the AP coordinator. Schools must retain seating charts for at least six months (unless the state or district requires that they be retained for a longer period of time). Schools should not return any seating charts in their exam shipments unless they are required as part of an Incident Report.

**NOTE:** If you administered exams to students with accommodations, review Part 2 of the 2019-20 AP Coordinator's Manual and the 2019-20 AP SSD Guidelines for information about completing the Nonstandard Administration Report (NAR) form and returning these exams.

The exam proctor should complete the following tasks if asked to do so by the AP coordinator. Otherwise, the AP coordinator must complete these tasks:

- Complete an Incident Report for any students who used extra paper for the free-response section. (Incident Report forms are provided in the coordinator packets sent with the exam shipments.) **These forms must be completed with a No. 2 pencil.** It is best to complete a single Incident Report for multiple students per exam subject, per administration (regular or late testing), as long as all required information is provided. Include all exam booklets with extra sheets of paper in an Incident Report return envelope (see page 281).

- Return all exam materials to secure storage until they are shipped back to the AP Program. (See pages 24–25 of Part 2 of the 2019-20 Coordinator’s Manual for more information about secure storage.)