



## SECTION 5

### TEST II SAMPLE CONSTRUCTED-RESPONSE ASSIGNMENTS

This section of the Georgia Assessments for the Certification of Educators® (GACE™) Preparation Guide is designed to assist you in responding to the constructed-response assignments on the test. Included in this section are:

- ▶ Constructed-response assignment directions
- ▶ Sample constructed-response assignments
- ▶ Assignment response sheets
- ▶ An example of a strong response to each sample assignment
- ▶ Scoring criteria that will be used in evaluating your response to each assignment

For each sample assignment, you may want to take the following steps to prepare for the test:

- Review the constructed-response assignment directions.
- Print the assignment and the assignment response sheet.
- Use scrap paper to make notes, write an outline, or otherwise prepare your response.
- Use the assignment response sheet to record your response. The assignment response sheet reflects the amount of space available on an actual test.
- After you complete the assignment, review the sample strong response, your response, and the scoring criteria.

Please note that a periodic table and a set of constants and formulas are provided for this test. Please refer to these materials as needed in responding to the sample test questions and assignments. These materials are located in the Assessment Reference Materials section at the end of this preparation guide.

A scientific calculator may be used for this test as needed in responding to the sample test questions and assignments. Please refer to the current GACE registration bulletin for information about the use of calculators at the test administration.

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## CONSTRUCTED-RESPONSE ASSIGNMENT DIRECTIONS

A sample of the directions for the constructed-response assignments is shown in the box below.

### CONSTRUCTED-RESPONSE ASSIGNMENT DIRECTIONS

For each constructed-response assignment in this section, you are to prepare a written response of up to one page and record it in the area provided on the appropriate Assignment Response Sheet in your answer document.

Read each assignment carefully before you begin to write. Think about how you will organize what you plan to write. You may use any blank space provided in this test booklet following each assignment to make notes, write an outline, or otherwise prepare your response. *However, each of your final responses must be written on the appropriate Assignment Response Sheet in your answer document.*

Your responses will be evaluated based on the following criteria:

- **Purpose:** The extent to which the response fulfills the purpose of the assignment in relation to relevant GACE framework objectives
- **Application of Content Knowledge and Skills:** The extent to which the response accurately and effectively applies content knowledge and skills in relation to relevant GACE framework objectives
- **Supporting Evidence:** The extent to which the response includes appropriate, specific supporting evidence of content knowledge and skills in relation to relevant GACE framework objectives

Evaluation of each response will be based on the criteria above, not on your writing ability. However, your response must be communicated clearly enough to permit a valid judgment of your knowledge and skills. Your responses should be written for an audience of educators in the field.

Your responses should be your original work, written in your own words, and not copied or paraphrased from some other work. Please write legibly. You may not use any reference materials during the test. Remember to review your work and make any changes you think will improve your responses.

The selected-response section of the answer document containing your name will be removed from your written responses to maintain your anonymity during the scoring process. Do not write your name on any other portion of the answer document, and do not separate any of the sheets from the document.

Please turn the page and begin the constructed-response assignment section of the test.

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## CONSTRUCTED-RESPONSE ASSIGNMENT ONE

### ■ Sample Constructed-Response Assignment One

Use the information below to complete the assignment that follows.

A hydroelectric power plant produces electricity using the flow of water through a turbine to drive electric generators.

- Describe the energy transformations that occur as a hydroelectric power plant generates electricity; and
- explain the changes that occur at the atomic or molecular level that result in the production of electricity in a hydroelectric power plant.



**■ Strong Response to Sample Constructed-Response Assignment One**

Water stored in an elevated reservoir has gravitational potential energy due to its elevation. As the water leaves the reservoir and flows downhill, the water's potential energy is converted to kinetic energy. When the water flows past the blades of a turbine in the hydroelectric plant, the kinetic energy of the water is converted into mechanical energy, turning the blades of the turbine. The mechanical energy of the rotating turbine is then transformed into electric energy as the turbine turns the armature of an electric generator. Conducting wires on the rotating armature move through a stationary magnetic field, inducing an alternating electric current in the wires of the armature. This process is known as electromagnetic induction.

As the wires on the rotating armature move through the magnetic field, electromagnetic forces act on the copper atoms and on the electrons. Since the copper atoms are anchored in the crystal lattice of the copper wire, they don't move much, but the electrons in the metal are free to move back and forth as the electromagnetic forces first push them in one direction and then push them in the opposite direction. This back and forth movement of electrons is the alternating electric current that is generated by hydroelectric power plants.

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## CONSTRUCTED-RESPONSE ASSIGNMENT TWO

### ■ Sample Constructed-Response Assignment Two

Use the information below to complete the assignment that follows.

A scientist wants to determine the quantitative relationship between the slope of a ramp and the maximum speed attained by a steel ball rolling down the ramp.

- Describe an appropriate investigative design that would allow a valid scientific conclusion to be drawn about this topic.



## Section 5: Test II Sample Constructed-Response Assignments

### ■ Strong Response to Sample Constructed-Response Assignment Two

The first step in this investigation is to develop a testable hypothesis. A sensible hypothesis would be to suggest that increasing the slope of the ramp will increase the maximum speed of the ball rolling down the ramp. Next, a controlled environment to test the hypothesis should be created. All variables except ramp angle must be held constant to ensure valid results. A relatively long ramp should be set up so that an appreciable difference will be recorded in the ball's maximum speed as the ramp angle is increased. The ramp should be set up so that once the ball achieves its maximum speed at the bottom of the ramp, the ball can roll over a level, smooth surface. The time required for the ball to roll a specific distance across the level surface after rolling down the ramp can be determined with a stopwatch and the horizontal velocity of the ball across the level surface can be calculated. Presuming only a small amount of speed will be lost to friction, the horizontal velocity will provide a good estimate of the ball's maximum speed at the bottom of the ramp. Several trials should be conducted at each different angle, as human reaction time is likely to introduce some error. Four different ramp angles should be tested so enough data can be collected to clearly illustrate the effect of ramp angle on the ball's maximum speed. Since friction will be a factor in how far the ball rolls, it is important to make sure that the level surface remains free of debris during each trial.

## CRITERIA FOR SCORING YOUR RESPONSE

Each response will be evaluated based on the following criteria.

<b>PURPOSE</b>	The extent to which the response fulfills the purpose of the assignment in relation to relevant GACE framework objectives
<b>APPLICATION OF CONTENT KNOWLEDGE AND SKILLS</b>	The extent to which the response accurately and effectively applies content knowledge and skills in relation to relevant GACE framework objectives
<b>SUPPORTING EVIDENCE</b>	The extent to which the response includes appropriate, specific supporting evidence of content knowledge and skills in relation to relevant GACE framework objectives

Each response is rated on a three-point scale. The three score points of the score scale correspond to varying degrees of performance that are related to the above criteria.

<b>Score</b>	<b>Description</b>
<b>3</b>	<p>The "3" response reflects thorough understanding of relevant content knowledge and skills as defined in relevant GACE framework objectives.</p> <ul style="list-style-type: none"> <li>• The response fully achieves the purpose of the assignment.</li> <li>• The response demonstrates an accurate and effective application of relevant content knowledge and skills.</li> <li>• The response provides appropriate, specific supporting evidence of relevant content knowledge and skills.</li> </ul>
<b>2</b>	<p>The "2" response reflects general understanding of relevant content knowledge and skills as defined in relevant GACE framework objectives.</p> <ul style="list-style-type: none"> <li>• The response largely achieves the purpose of the assignment.</li> <li>• The response demonstrates a generally accurate, generally effective application of relevant content knowledge and skills.</li> <li>• The response provides some appropriate and general supporting evidence of relevant content knowledge and skills.</li> </ul>
<b>1</b>	<p>The "1" response reflects limited or no understanding of relevant content knowledge and skills as defined in relevant GACE framework objectives.</p> <ul style="list-style-type: none"> <li>• The response partially achieves or fails to achieve the purpose of the assignment.</li> <li>• The response demonstrates limited, inaccurate, and/or ineffective application of relevant content knowledge and skills.</li> <li>• The response provides limited or no appropriate, specific supporting evidence of relevant content knowledge and skills.</li> </ul>

Please note: A response that is unrelated to the assigned topic, illegible, not primarily in the target language, or lacking a sufficient amount of original work to score will be considered **unscorable**. If there is no response to the assignment, then the response will be considered **blank**.