Listening Practice Set 4

Directions: Read the script. Give yourself 10 minutes to answer the questions in this practice set.

Glacier Movement

Narrator Listen to part of a lecture in a geology class.

Professor Last time we started to talk about glaciers and how these masses of ice form from crystallized snow. And some of you were amazed at how huge some of these glaciers are. Now, even though it may be difficult to understand how a huge mass of ice can move—or flow, it's another word for it—it's really no secret that glaciers flow because

of gravity. But how they flow, the way they flow needs some explaining. Now, the first type of glacier flow is called basal slip.

Basal slip—or sliding, as it's often called—basically refers to the slipping or sliding of a glacier across bedrock—actually across a thin layer of water on top of the bedrock.

Uh, so this process shouldn't be too hard to imagine. What happens is that the ice at the base of a glacier is under a great deal of pressure, the pressure comes from the weight of the overlying ice. And you probably know that under pressure, the

melting temperature of water, uh, of the ice, I mean, is reduced. So ice at the base of the glacier melts, even though it's below zero degrees Celsius, and this results in a thin layer of water between the glacier and the ground. This layer of water reduces friction, it's … it's like a lubricant, and it allows the glacier to slide or slip over the bedrock. OK?

Now, the next type of movement we'll talk about is called deformation.

You already know that ice is brittle—if you hit it with a hammer, it will shatter like glass. But ice is also plastic—it can

change shape without breaking. If you leave, for example, a bar of ice supported only at one end, the end—the unsupported end—will deform under its own weight—it'll kind of flatten out at one end, get distorted, deformed.

Think of deformation as a very slow oozing. Well, depending on the stresses on a glacier, the ice crystals within it reorganize. During this … uh, reorganization, uh, the ice crystals realign in a way that allows them to slide past each other. And so the glacier oozes downhill without any ice actually melting. Now there are a couple of factors that affect the amount of deformation that takes

place or the speed of the, ah, glacier's movement. For example, deformation is more likely to occur the thicker the ice is—because of the gravity of the weight of the ice. And temperature also plays a part here, in that cold ice does not move as easily as ice that is closer to the melting point—in fact, it's not too different from, hmm, the way oil is, uh, thicker, at low temperatures. So if you have a glacier in a slightly warmer region, it will flow faster than a glacier in a cooler region.

OK, hmm, now I'd like to touch briefly on extension and compression. Your textbook includes these as types—as

a particular type—of glacial movement, but you'll see that there are as many textbooks that omit it as a type of movement as include it. And I might not include it right now if it weren't in your textbook. But, hmm, basically, the upper parts of glaciers have less pressure on them, so they don't deform as easily, they tend to be more brittle. And crevasses can form in these upper layers of the glaciers when the glacier comes into contact with bedrock walls or, ah, is otherwise under some kind of stress but can't deform quickly enough. So the ice will expand or constrict, and that can cause big fissures, big cracks to form in

the surface layers of the ice. And that brittle surface ice moving is sometimes considered a type of glacial movement, depending on which source you're consulting.

Now, as you probably know, glaciers generally move really slowly, but sometimes they experience surges, and during these surges, in some places they can move at speeds as high as 7,000 meters per year. Now speeds like that are pretty unusual, hundreds of times faster than the regular movement of glaciers—but you can actually see glaciers move during these surges, though it is rare.

Directions: Answer the questions.

1. **What is the lecture mainly about?**
   - A Explanations of how glaciers move
   - B Landscape changes caused by glacial movement
   - C Climate changes that influence glacial movement
   - D Causes of glacial formation

2. The professor discusses the process of basal slip. Put the steps in the correct order.

Answer Choices

A Friction between the glacier and bedrock is reduced.

B A liquid layer forms at the base of the glacier.

C The glacier begins to slide.

D Pressure is increased on the ice.

3. **What factors are involved in the amount of deformation a glacier undergoes? *Choose 2 answers.***

   A Thickness of glacial ice

   B The hardness of glacial ice

   C The amount of water beneath the glacial ice

   D The temperature of the glacial ice

4. **What does the professor say about the speed of glaciers?**

   A It affects the amount of glacial ice that forms.

   B It can be fast enough for movement to be noticeable.

   C It is reduced by cracks in the ice.

   D It is unusually high in colder regions.

5. What is the professor explaining when he says this:

Professor: But ice is also plastic—it can change shape without breaking. If you leave, for example, a bar of ice supported only at one end, the end—the unsupported end—will deform under its own weight …

A A characteristic of ice that is related to glacial movement

B How scientists first discovered that glaciers could move

C That factors like temperature can affect the strength of ice

D Why deformation is the most common type of glacial movement

6. Part of the lecture is repeated below. Read it and answer the question.

Professor: Now I'd like to touch briefly on extension and compression. Your textbook includes these as types—as a particular type—of glacial movement, but you'll see that there are as many textbooks that omit it as a type of movement as include it. And I might not include it right now if it weren't in your textbook.

What does the professor imply about compression and extension?

A He believes it accounts for a great deal of glacial movement.

B He thinks it is a slower type of glacial movement than basal slip.

C He is not convinced that it is a type of glacial movement.

D He does not agree that it causes fissure in glaciers.