

# 2005 UAH REGIONAL SCIENCE OLYMPIAD

## DYNAMIC PLANET EXAM

### INSTRUCTIONS

**WRITE YOUR GROUP NUMBER ON THE ANSWER SHEET NOW!!!**

Do not open the test until we tell you.

**Write your answers ONLY on the answer sheet.**

If a question says “Why” or “Explain,” write one or two sentences to explain your answer. If the question does not say “Why” or “Explain,” then don’t!

If you are writing more than what fits in the space you are given, you are either writing too large or writing too much.

**High School groups:** *make sure you complete the three extra questions on the last page.*

For middle school groups, the test is worth 32 total points. For high school groups, the test is worth 50 total points.

The exam ends at 1:15 p.m. You may take the exam with you when you leave.

Our names are **Cody** and **Thomas**. Ask a question if you need to. Good luck!

Required words: “This event emphasizes the use of process skills to complete tasks related to glaciation.” In the case of a tie between two or more teams, scores on each of the following questions will be examined in order to break the tie: 11, 14, 10, 12, and then 8. Reference materials must fit in an area no larger than 12” x 12” x 3”. In order to understand glaciers and glacier flow, students must understand basic geology, geography, properties of water substance, and earth surface features and processes. A bit of all of these topics will be tested on this exam.

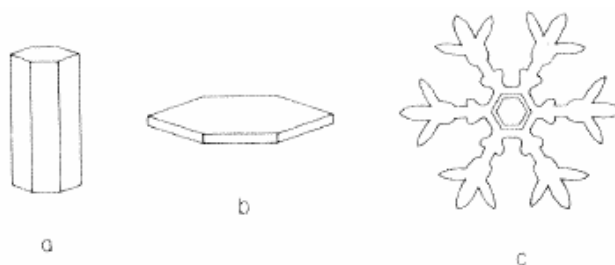


**2005 UAH REGIONAL SCIENCE OLYMPIAD  
DYNAMIC PLANET EXAM**

**WRITE YOUR ANSWERS ON THE ANSWER SHEET.**

*You may take this exam with you when you leave; do not write your answers on it!*

1. Glaciers are composed of recrystallized snowflakes. Identify these types of ice crystals. (1 point each)



(possible answers: column, plate, dendrite, irregular, graupel, pellet, stellar, hail)

2. These three major cloud types influence the water cycle, which has a great impact on glacier evolution. Write the name of each cloud type on your answer sheet. (1 point each)



(possible answers: cirrus, stratus, cumulus, cumulonimbus, tornado)

3. Icebergs often exist due to calving from tidewater glaciers. Why are icebergs so dangerous to boats and ships? (2 points)
4. How do glaciers erode the land under them? (2 points)

5. Would the earth reflect or absorb more energy from the sun if global ice coverage were doubled? (2 points)
6. Would the sea-surface level rise or fall if the earth's ice coverage were doubled? (3 points)
7. What time of year do you find the most icebergs in the North Atlantic? Why? (3 points)
8. What is meant by "supercooled water?" Does supercooled water exist in glaciers? (3 points)
9. Many of you may have crossed the Tennessee River this morning, or sometime recently. Which way does it flow, *to the east* or *to the west*? How do you know? (3 points)
10. Why do glaciers appear to have a blue tint? (4 points)
11. On rainy days, the road in front of this building has small cracks that fill with water. If the temperature then drops below freezing, do you think the crack will get larger, get smaller, or stay the same size? Explain. (4 points)

**HIGH SCHOOL GROUPS: YOU MUST ALSO  
COMPLETE THE FOLLOWING THREE (3) QUESTIONS**

12. Assume Earth is currently in an ice age. Name and explain one *reasonable* process by which the ice age can be reversed. (6 points)
13. Which isotope of oxygen,  $O_{16}$  or  $O_{18}$ , would have a higher ocean content during an ice age? Why? (6 points)
14. What would be the effect on ocean currents in the North Atlantic if the northern ice cap were to completely melt, as some scientists suggest will happen in the next 50 years?

**2005 UAH REGIONAL SCIENCE OLYMPIAD**  
**DYNAMIC PLANET EXAM**

Answer Sheet

My Group Number Is: \_\_\_\_\_

1. A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

2. A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

3.

4.

5.

6.

7.

8.

9.

10.

11.

**QUESTIONS 12-14 ARE FOR HIGH SCHOOL GROUPS ONLY**

12.

13.

14.