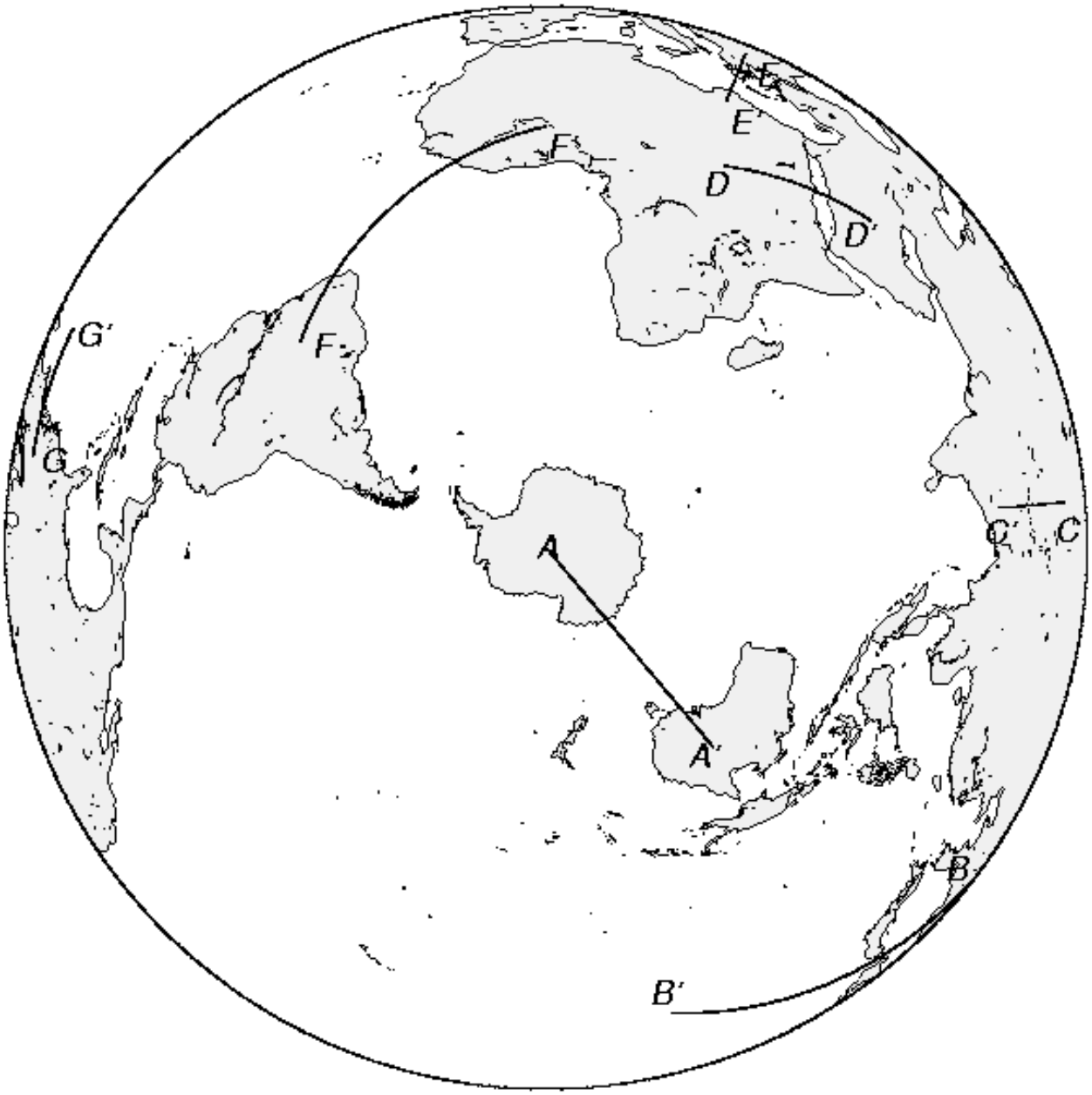
Geol. 202 Second Test **March 4, 2005** **Name _____**

Please write clearly! illegible answers will be treated as wrong.

1. On the map on the next page, draw in all plate boundaries with different symbols for each type, label their names, the names of each plate and draw arrows showing the relative motion across *each* boundary. In addition, explain how the length of the lines between the sites shown will change in the future. How can these motions be measured over a time interval of ~10 years?


E
E′
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2. The planets are divided into two basic groups. Describe these groups, state which planets fall in each one, and explain what causes the differences between the two groups.

3.

a) Define the three primary methods of heat transfer.

b) Explain which ones are most important in each of these regions, and why:

i) The earth's atmosphere

ii) The earth's oceans

iii) The earth's mantle

iv) The earth's core

4. Using a sketch map, name the different segments of the Pacific-North America plate boundary, describe the motion on each, and explain how the motion reflects. Also, Explain what data from each segment constrains the plate motion and how.

5. Which of the following convect most readily, all other things being held constant and *why*?
(a) A fluid of greater density or one of lesser density?

(b) A fluid of greater viscosity or one of lesser viscosity?

(c) A large shallow pan of water or an deep kettle of water (both with equal volume)?

(d) A fluid whose volume contracts a lot upon heating or one that expands much less?

(e) A fluid on the moon and the same one on the Earth?

6. a) What is the heaviest element generated in a stable star? Explain why.

b) Explain how a supernovae comes about.

c) Why are the processes that occur during a supernova of importance to the composition of the Earth?

7. a) Explain the Wilson cycle with a set of sketches, showing what occurs and giving a modern example.

b) What are the ages of the oldest continental and oceanic crust, and how do these reflect the Wilson cycle.