ANSWER **ANSWER** **ANSWER**

Round: 10A

The Ontong Java Plateau, near the Solomon Islands, covers an area of 2,000,000 km^2. You collect a series of rock samples across the Plateau and all the samples have similar textures and compositions. Figure 1 illustrates a sketch of one sample under a microscope.

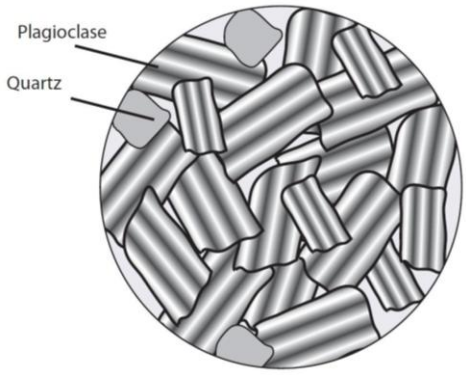

Figure 2: Rock sample under a microscope. The field of view is 5mm.

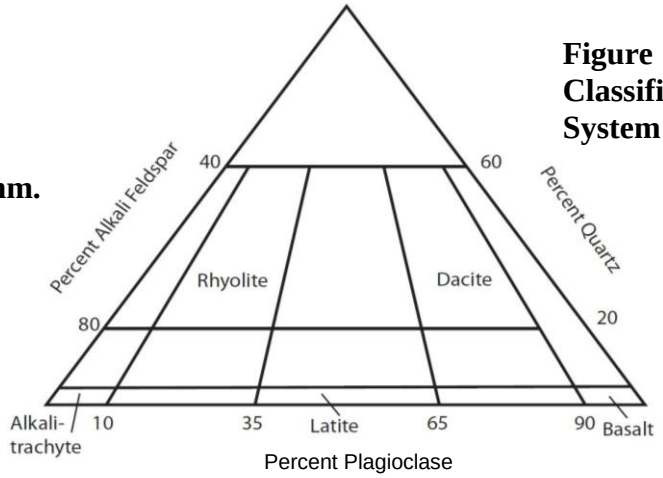

Figure 1: Rock Classification System

1. Compare the minerals seen in Figure 1 to the rock type classification system in Figure 2. What type of rock have you collected?
   Basalt OR flood basalt (3 pts)
2. How does this type of rock form?
   This rock formed when magma solidified above the seafloor. (Must have magma OR volcanic. Must have above OR on the seafloor OR extrusive.) (3 pts)
3. The Ontong Java Plateau covers an area of 2,000,000 km^2 and is on average 30 km thick. What is the volume of the plateau?
   60,000,000 km^3 (2 pts for number, 2 pts for unit, 4 pts total)
4. The Ontong Java Plateau formed over a period of 5 million years. How many cubic kilometers of rock were produced each day? Show your work.
   (2 pts for work, 1 pt for correct number, 1 pt for correct units, 4 pts total)
   60,000,000/5,000,000/365=0.032 km^3 OR 60,000,000/5,000,000/12/30=0.033 km^3 (0.03 km^3 is acceptable)
5. Based on the type of rock you have found, what can you tell about the geologic history of the Ontong Java Plateau?
   The Ontong Java Plateau is a large igneous province (2 pts)
6. Formation of the Ontong Java Plateau occurs at about the same time as the early Aptian anoxic event. Describe what happens during an oceanic anoxic event.
   The entire ocean becomes depleted with respect to dissolved oxygen (2 pts), causing wide death among marine organisms (2 pts). (Must discuss loss of oxygen, AND dying OR extinction of organisms.)