



**Duration: 30 min. for each stop**

**Date: August 30, 2019**

## Field Practical Test

**Field kit:** Hammer, dilute hydrochloric acid, and magnifying glass

### STOP 1. Identification of minerals and rock at the top of Mt. Biseul

**Q1) Select ALL the geological characteristics you can observe in this stop. (Circle your choices.)**

- a. It is a rock made of multiple minerals.
- b. It has bedding.
- c. It has a micro-crystalline structure.
- d. It is a rock made of one mineral.
- e. It has a crystalline structure.
- f. It has cross-bedding.
- g. It has fine-grained crystals (invisible to the naked eye).
- h. It has minerals aligned in a specific direction.
- i. The minerals are randomly oriented.

**Q2) Based on your observations, what can you conclude about the nature of the rock here?**

**(Circle your choice. Only one answer.)**

- a. It is a marine sedimentary rock.
- b. It is a continental sedimentary rock.
- c. It is an intrusive igneous rock (plutonic)
- d. It is an extrusive igneous rock (volcanic)
- e. It is a rock formed by regional metamorphism.
- f. It is a rock formed by thermal metamorphism.

**Q3) Using your field kit, identify ALL the minerals listed below that likely make up the rock here. (Circle your choices.)**

- a. Calcite
- b. Andalusite
- c. Halite
- d. Biotite
- e. Garnet
- f. K-feldspar
- g. Olivine
- h. Quartz
- i. Plagioclase
- j. Pyroxene

**Q4) Using your field kit, identify the rock here. (Circle your choice. Only one answer.)**

- a. Asphalt
- b. Basalt
- c. Chert
- d. Clay
- e. Dolomite
- f. Gabbro
- g. Gneiss
- h. Granite
- i. Quartzite
- j. Limestone
- k. Marl
- l. Schist
- m. Porphyritic rock
- n. Obsidian
- o. Sandstone

**STOP 2. Rock structure near the top of Mt. Biseul**

**Q1) Which type of joint is dominant (most common) in this outcrop? (Circle your choice.)**

- a. Columnar joint
- b. Sheet joint
- c. Radial joint
- d. Extension joint
- e. Shear joint

**Q2) Choose ALL the physical changes required to form the dominant joint type in this outcrop. (Circle your choices.)**

- a. Unloading
- b. Compression
- c. Expansion
- d. Heating
- e. Shearing

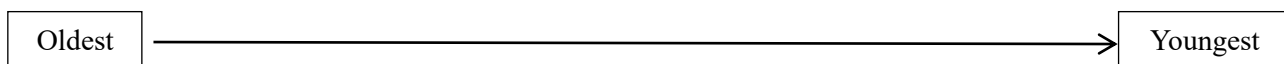
**Q3) Which processes of the rock cycle are demonstrated by the phenomenon here? (Circle ALL possible processes.)**

- a. Melting
- b. Only slow cooling
- c. Eruption
- d. Intrusion
- e. Only fast cooling
- f. Slow cooling followed by fast cooling
- g. Uplifting
- h. Mechanical erosion
- i. Weathering
- j. Transportation
- k. Sedimentation
- l. Lithification
- m. Burial
- n. Regional metamorphism

**Q4) Chronologically order ONLY those processes that you marked for Q3 above. Write the corresponding letters inside the boxes.**

*Note: The number of boxes does not indicate the number of correct processes!*

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**STOP 3. Formation of big boulders and soil near the Azalea Hotel**

**Q1) This question pertains to the formation of the boulders. (Circle your choice.)**

The spheroidal exfoliation (onion-skin structure) developed in the boulder formed by \_\_\_\_\_.  
 (Circle the correct answer.)

- a. regional metamorphism
- b. thermal metamorphism
- c. mechanical weathering
- d. fast cooling of magma
- e. slow cooling of magma
- f. chemical weathering

**Q2) Which geological process was responsible for the formation of clay minerals in the soil around the boulders? (Circle your choice.)**

- a. Oxidation of quartz
- b. Reduction of pyrite
- c. Hydration of feldspar
- d. Dissolution of calcite
- e. All of the above processes

**Q3) The boulder and the soil here resulted from a SEQUENTIAL combination of some of the geological processes. What processes led to formation of the boulder and the soil after rock formation?**

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|----------------------|--------------------------|
| a. Melting           | g. Mechanical weathering |
| b. Intrusion         | h. Chemical weathering   |
| c. Volcanic eruption | i. Sedimentation         |
| d. Fast cooling      | j. Lithification         |
| e. Slow cooling      | k. Regional metamorphism |
| f. Uplifting         | l. Thermal metamorphism  |

**First, circle ALL the possible geological processes; Next, write the corresponding letters inside the box in a CHRONOLOGICAL order.**

*Note: The number of boxes does not indicate the number of correct processes.*

