**Laboratory 8 Answer Sheet**

For use with the AGI/NAGT Laboratory Manual in Physical Geology, 11th ed.

**INSTRUCTIONS**

(1) Your responses on this answer sheet must be the result of **your work alone.** This is not a group-work exercise.

(2) This answer sheet with your responses is a **confidential document** that you must not provide to anyone else or to any group file (digital or paper) where others might gain access to the answers.

(3) Before you submit it to your TA for grading, **you must rename this document with your first and last names in the title**. So if the answer sheet was submitted by Elmer Fudd, the document (saved as a Word file) would be renamed Elmer-Fudd-Lab8Answers.docx

(4) Send this form, completed, to your graduate teaching assistant in an email from your Baylor email account. Be certain that the **subject line is your first and last name plus "Lab 8 answers."** So if this answer sheet was submitted by Elmer Fudd, the subject line of the email would be "Elmer Fudd Lab 8 answers." **Include this completed document in the email as an attachment.**

 All Tuesday labs: Zequn Wu Zequn\_Wu1@baylor.edu

 Wednesday 12:20-2:25 lab: Kate Hobart Kate\_Hobart1@baylor.edu

 Wednesday 2:30-4:25 lab: Amanda Wang Zhao\_Wang1@baylor.edu

 All Thursday labs: Sam Barber Samuel\_Barber1@baylor.edu

(5) Wherever you encounter <response> in the raw answer sheet, **replace** <response> **with your answer or response.**

 EXAMPLE

 What is your favorite color? <response> might become

 What is your favorite color? green

———————————————————————————————————————————————

**Your Name:** <response>

———————————————————————————————————————————————

**Activity 8.1 Geologic Inquiry for Relative Dating**

A-1 Which layer (top or bottom) did you label "1"? <response>

A-2 What number did you assign to the youngest layer? <response>

B-1 Which layer is the oldest? <response>

How do you know? <response>

B-2 (No response needed on this answer sheet. Draw the contacts in your book.)

B-3 Are the fractures older or younger than the lava flow? <response>

How do you know? <response>

B-4 Are the clasts older or younger than the brown soil? <response>

How do you know? <response>

C-1 What might have caused the beds to be folded? <response>

C-2 What sequence of events might have caused the unconformity? <response>

D What are three rules that a geologist could follow to tell the relative ages of rock layers, fractures, clasts, and folds in geologic cross sections? <response> <response> <response>

———————————————————————————————————————————————

Activity 8.2 Determining Sequence of Events in Geologic Cross-Sections

 Geologic Cross Geologic Cross Geologic Cross Geologic Cross

 Section 1 Section 2 Section 3 Section 4

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response> <response>

 <response> <response> <response>

 <response> <response> <response>

 <response> <response>

 <response>

 <response>

 <response>

 <response>

 <response>

 <response>

 <response>

 <response>

 <response>

B (No response needed on this answer sheet. Draw the contacts in your book.)

———————————————————————————————————————————————

Activity 8.3 Using Fossils to Date Rocks and Events

Note that you should download the revised version of Figure 8.13 (Fig8.13Revised-©2020Pearson.pdf) to complete your work on this activity. That revised version is a proprietary, copyright document. You do not have permission to transfer that document or the associated electronic file to anyone else.

A-1 What index fossils from Fig. 8.13 are present in the rock in Fig. A8.3.1A? <response>

A-2 What is the age range of the rock in Fig. A8.3.1A based on its index fossils? <response>

A-3 How old is this rock? Older boundary age: about <response> million years

 Younger boundary age: about <response> million years

B-1 What index fossils from Fig. 8.13 are present in the rock in Fig. A8.3.1B? <response>

B-2 What is the age range of the rock in Fig. A8.3.1B based on its index fossils? <response>

B-3 How old is this rock? Older boundary age: about <response> million years

 Younger boundary age: about <response> million years

C-1 What index fossils from Fig. 8.13 are present in the rock in Fig. A8.3.1C? <response>

C-2 What is the age range of the rock in Fig. A8.3.1C based on its index fossils? <response>

C-3 How old is this rock? Older boundary age: about <response> million years

 Younger boundary age: about <response> million years

D-1 The two formations that are separated by a disconformity are <response> and <response>

D-2 minimum: <response> Myr maximum: <response> Myr

E What geologic event occurred during the Mesozoic Era in the region where Fig. 8.6 is located? <response>

 Explain. <response>

———————————————————————————————————————————————

Activity 8.4 Numerical Dating of Rocks and Fossils

A-1 About how many half-lives of the uranium-235 to lead-207 decay pair have elapsed in the zircon crystals? <response>

A-2 What is the numerical age of the lava flow based on its zircon crystals? <response>

Explain how you arrived at your answer. <response>

A-3 What is the age of the rock layers above the lava flow? <response>

A-4 What is the age of the rock layers beneath the lava flow? <response>

B Based on Fig. 8.14, what is Earth’s approximate age? <response>

Explain your reasoning. <response>

C-1 A reasonable initial estimate of the age of the peat bed: <response>

Explain: <response>

C-2 Why must you be careful in sampling the peat bed to avoid any young plant roots or old limestone? <response>

D-1 Why does the numerical age of zircon grains found on a modern New Jersey beach not equal the age of the beach (0 Myr)? <response>

D-2 Suggested rule concerning the dating of rocks based on minerals included in the rock: <response>

E Should you be suspicious of the claims of the seller of an "authentic dinosaur bone" concerning its carbon date? <response>

Explain. <response>

———————————————————————————————————————————————

Activity 8.5 Infer Geologic History from a New Mexico Outcrop

A-1 What is the relative age of the sedimentary rocks in this rock exposure? <response>

Explain your reasoning. <response>

A-2 What is the numerical age of the sill? <response>

How did you calculate the answer? <response>

A-3 Approximately how much separation has occurred along this fault? <response> m

What additional information would you like to have to make a better estimate of fault separation? <response>

B Make a numbered list of the geologic events that contributed to the development of the geological features in this outcrop, starting with deposition of the sandstone (oldest event: 1) and ending with the time this picture was taken. Include the name(s) of relevant period(s) from the geologic time scale as well as the isotopic age of the sill in your writing. Your reasoning and number of events may differ from those of other students.

<response in numbered list form>

C Write a question that you have about the geologic history of this location. <response>

What geologic evidence would you need to answer the question? <response>