Name: _____ Grade _____/100 + 5 bonus

GY 112L Lab Assignment 11

Mesozoic Fossils and Rock Suites Part 2

Note: This is the second of the labs dealing with the Mesozoic Era. Last week was pretty intense and this week will also keep you busy. If it's any conciliation, next week will be a bit easier (fewer rock specimens, fewer fossils and fewer drawing). The lab is broken up into four parts. Part 1 deals with the cephalopods, Part 2 deals with the echinoderms, Part 3 is drawings and Part 4 deals with the surface rocks of Alabama. Refer to the stratigraphic column in the background materials portion of this lab for any necessary help in answering the questions. There may also be a couple of internet research questions spread throughout the lab, some of which deal with other Mesozoic areas of the country.

Part One: Fossils

Echinoderms

Specimen 11-1: Crinoid stem segments (Mississippian).

Why is it much more common to find crinoid stems in pieces than intact?

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_____

_____

_____

_____**[5 points]**

Specimen 11-2: *Periarchus* sp. (Eocene)

a) Okay, so this particular beastie is not Mesozoic in age. Nevertheless, it is a fine example of an echinoid. What is its more common name?

_____ **[3 points]**

b) In which depositional environment did they normally live?

_____ **[3 points]**

Specimen 11-3: *Pentremites* sp. (Mississippian)

This is an excellent example of a blastoid. What characteristics allow you to classify it as an echinoderm? _____

_____

_____**[3 points]**

Specimen 11-4: *Epiaster* sp. (Cretaceous)

a) What is the more common name for this variety of echinoid?

_____ **[3 points]**

b) What was its mode of life? _____

_____

_____

_____

_____**[5 points]**

c) Why do some echninoderms have spines? (There is more than one possible answer here. Give as many possibilities as possible).

_____

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_____

_____**[5 points]**

Cephalopods

Specimen 11-5a: *Ceratites* sp. (Triassic) **Specimen 11-5b:** *Perispinctes* sp. (Jurassic)

a) Two of the major divisions of the cephalopods were both characterized by coiled tests. The nautiloids (Nautiloidea) and the ammonites (Ammonoidea) both became dominant in the Mesozoic. How are the two distinguished from one another?

_____

_____

_____

_____**[4 points]**

b) How are the specimens of *Ceratites* preserved (careful; think back to earlier labs).

_____**[3 points]**

c) What suture pattern characterizes *Perispinctes* sp? (Careful; make sure that you look at the internal rather than the external part of the fossil.

_____**[3 points]**

Specimen 11-6: *Bacculites* sp. (Cretaceous)

This is an straight-cone version of an extinct cephalopod. It broke right along one of the sutures and you can easily fit the two pieces together. The cone was originally empty, but was filled with sediment after it died. That sediment was subsequently lithified.

a) Like its coiled cousins, *Bacculites* sp. formed its shell out of aragonite. Part of the original aragonite still remains on this specimen. What properties of the specimen allow you to conclude this?

_____

_____**[3 points]**

Specimen 11-7: Belemnites (unspeciated).

This is yet another group of cephalopods. They were cigar shaped (long and pointed) and ranged in size from small (a few cm) to huge (2 m).

a) Which living organisms are thought to be descended from the belemnites? (Ask for help here or consult textbook/internet sources)

_____**[3 points]**

b) The belemnites that you are looking at represent only part of the original organism. These are the pointed back ends of the belemnite's peristrom (otherwise known as the **rostrum**). What mineral is it composed of?

_____**[3 points]**

Part 3: Now It's Really Getting Annoying Drawing 101

Draw any <u>one</u> of the beasties in the lab today. I promise, your days of Drawing 101 are rapidly coming to an end. **[15 points]**

Name of Specimen: _____ Specimen Number:_____

Scale

But if you really like to draw, here is one of the very last bonus credit opportunities in GY 112L. Draw a second (different) fossil from today's lab for 5 bonus points credit.

Name of Specimen: _____ Specimen Number:_____

Scale

Part Four: Mesozoic Surface Rocks of Alabama

Specimen 11-8: (**RI 1603)** Tuscaloosa Group (Upper Cretaceous)

a) What is the name of this sedimentary rock?

_____ **[3 points]**

b) How would you describe its sorting and grain size? **[4 points]**

Sorting_____ Grain Size _____

c) What is the mode of preservation of the fossils it contains?

_____ **[3 points]**

d) The rock contains a lot of a "sparkly" mineral. Using your hand lens, identify that mineral.

_____ **[3 points]**

Specimen 11-9: (**RI 3454)** Selma Chalk (Upper Cretaceous)

The Selma Chalk is a very thick Upper Cretaceous Group that underlies much of southern Alabama. It can be subdivided into numerous formations and members.

a) What is the name of this sedimentary rock? _____ **[3 points]**

b) Specimens like this are commonly full of holes. These holes are not trace fossils. What process caused the holes in this rock? (Hint: think of chemical reactions after the rock formed).

_____

_____

_____**[4 points]**

c) This is a rock that contains a lot of nannofossils (the smallest fossils that you can ever imagine). It has been estimated that each cubic cm of Selma chalk contains 40 billion fossils (4×10^{10}). If the Selma chalk is 100 km long by 300 m thick by 50 km wide, how many "beasties" does it contain? (You will need a scientific calculator to do this question):

_____**[5 points]**

d) An internet research question. Why are there so many Cretaceous chalks around the world?

_____

_____

_____

_____

_____ **[5 points]**

Specimen 11-10: (RI 3346) Ripley Formation (Upper Cretaceous)

a) This rock contains a lot of a green mineral called glauconite, but it is still recognizable as a particular sedimentary rock. Which one?

_____ **[3 points]**

b) What is mode of preservation of the fossils it contains?

_____ **[3 points]**

c) What types of fossils do you see?

_____ **[3 points]**

Name: _____

Doodle Space