

Name: _____

Grade _____/100+5 bonus

GY 112 Lab Assignment 2

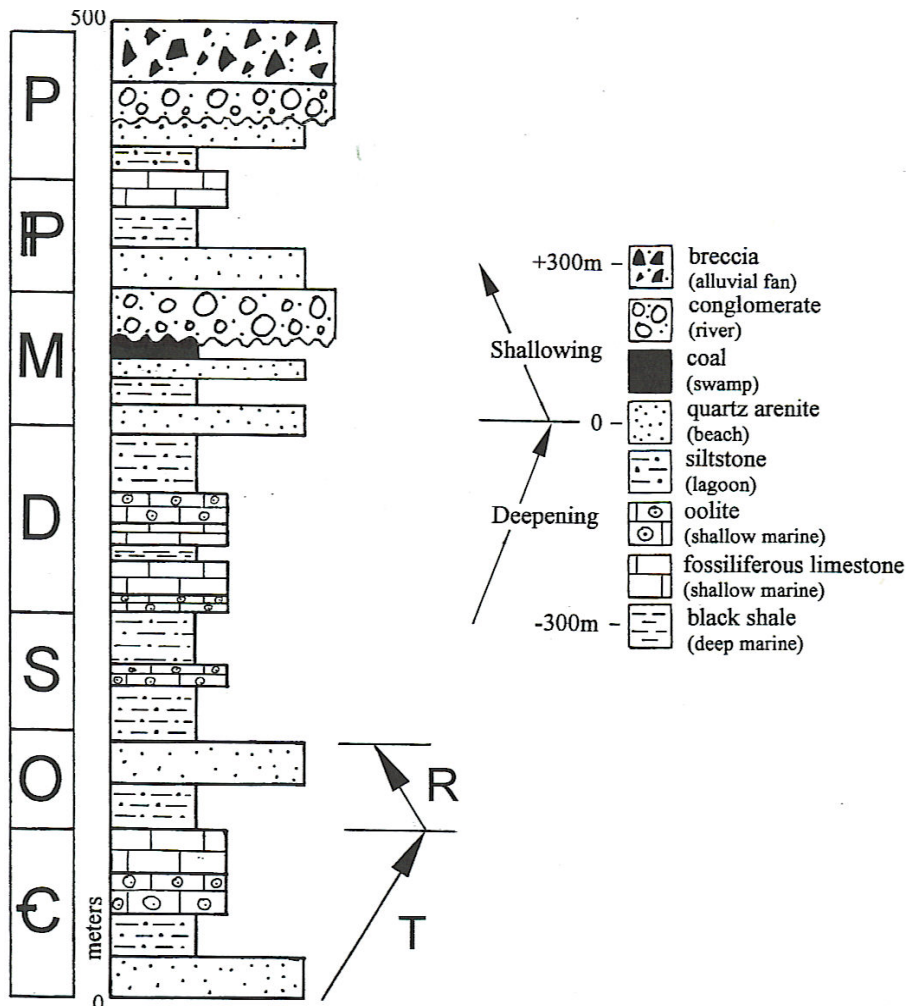
Vertical Succession and Sequence of Events Cartoons

Note: In many of the sequence of events exercises you will be asked to determine the exact order in which the events occurred. Start at the bottom of the diagram (the oldest rocks) and work your way to the top. Make sure you answer the question completely. Use a pencil and be neat!

Part A: Vertical Sequences

The diagram below is a fairly thick section of sedimentary rocks that contain several transgressions and regressions. You can distinguish these changes in sea level based upon the vertical transition of rock types. The Cambrian aged rocks at the base of the section pass from quartz arenite to siltstone to oolite to fossiliferous limestone. The legend indicates that this transition of rock types occurred due to a gradual increase in sea water depth. Hence, the Cambrian rocks record a transgression.

1) Interpret the transgressive and regressive history of the rest of the section [10 points]. Ask for help before you get started. This is an easy exercise, but is initially confusing.



2) During which geological period did the least significant transgression occur? (i.e., the one involving the slightest relative increase in sea level)

_____ [3 points].

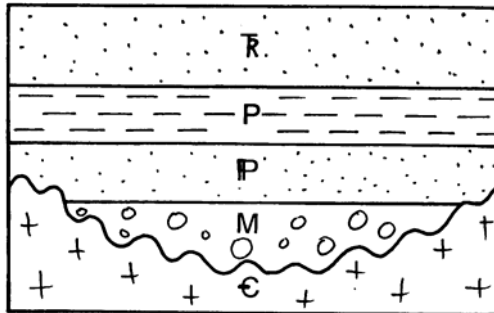
3) During which geological period did the most significant regression occur? (i.e., the one involving the greatest relative decrease in sea level)

_____ [3 points].

4) During which geological period(s) did the 2 unconformities form?

_____ [2 points]

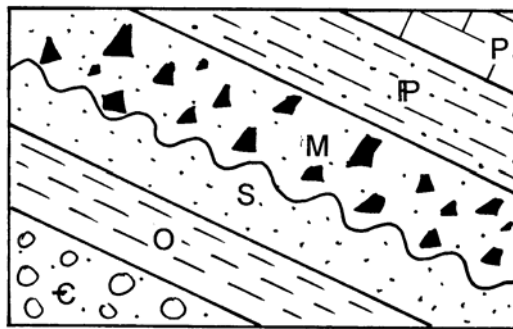
Part B: Unconformities



1) Type of unconformity? _____ [2 points]

2) Which geological period(s) are missing across the unconformity?

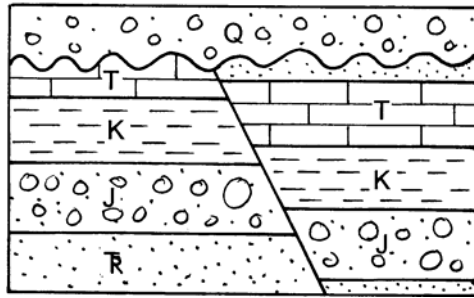
_____ [2 points]



3) Type of unconformity? _____ [2 points]

4) Which geological period(s) are missing across the unconformity?

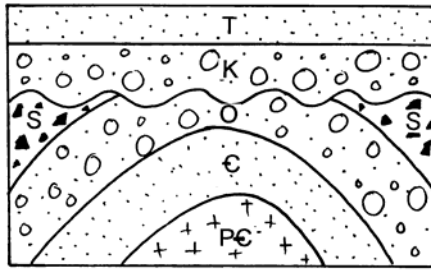
_____ [2 points]



5) Type of unconformity? _____ [2 points]

6) Type of material deposited during the Cretaceous? _____ [2 points]

7) Type of geological structure (e.g., fault or fold¹)? _____ [2 points]

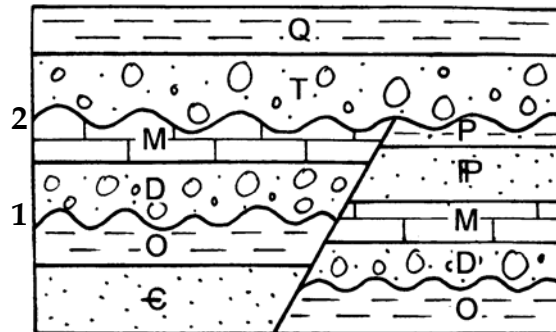


8) Type of unconformity? _____ [2 points]

9) Type of geological structure? _____ [2 points]

10) What geological period(s) are missing at the unconformity?

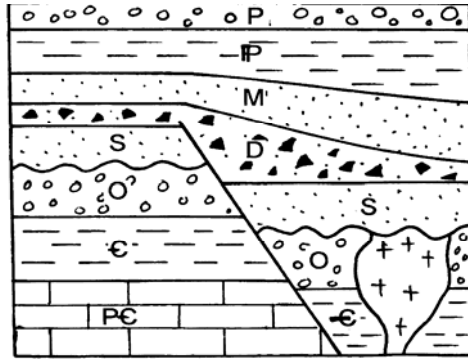
_____ [2 points]



11) Which unconformity is older, 1 or 2? _____ [3 points]

12) Which principle(s) allow you to conclude this? _____ [3 points]

¹ If you are familiar with the material covered in GY 111, feel free to identify the specific type of structure (e.g., anticline, normal dip slip fault etc.)



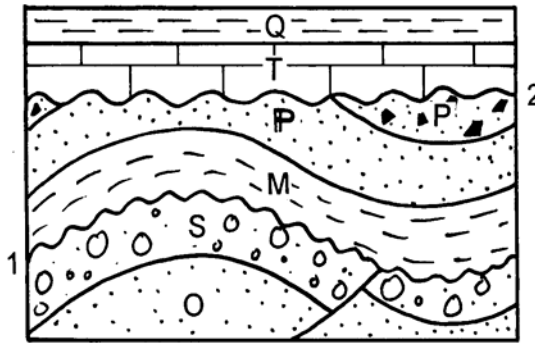
13) Type of unconformity? _____ [2 points]

14) How old is the intrusion? (tricky) _____ [2 points]

15) When did faulting occur? (trickier) _____ [3 points]

16) How do you know? _____

_____ [4 points]



17) Type of unconformity 1? _____ [2 points]

18) Type of unconformity 2? _____ [2 points]

19) Type of material deposited during the Silurian? _____ [2 points]

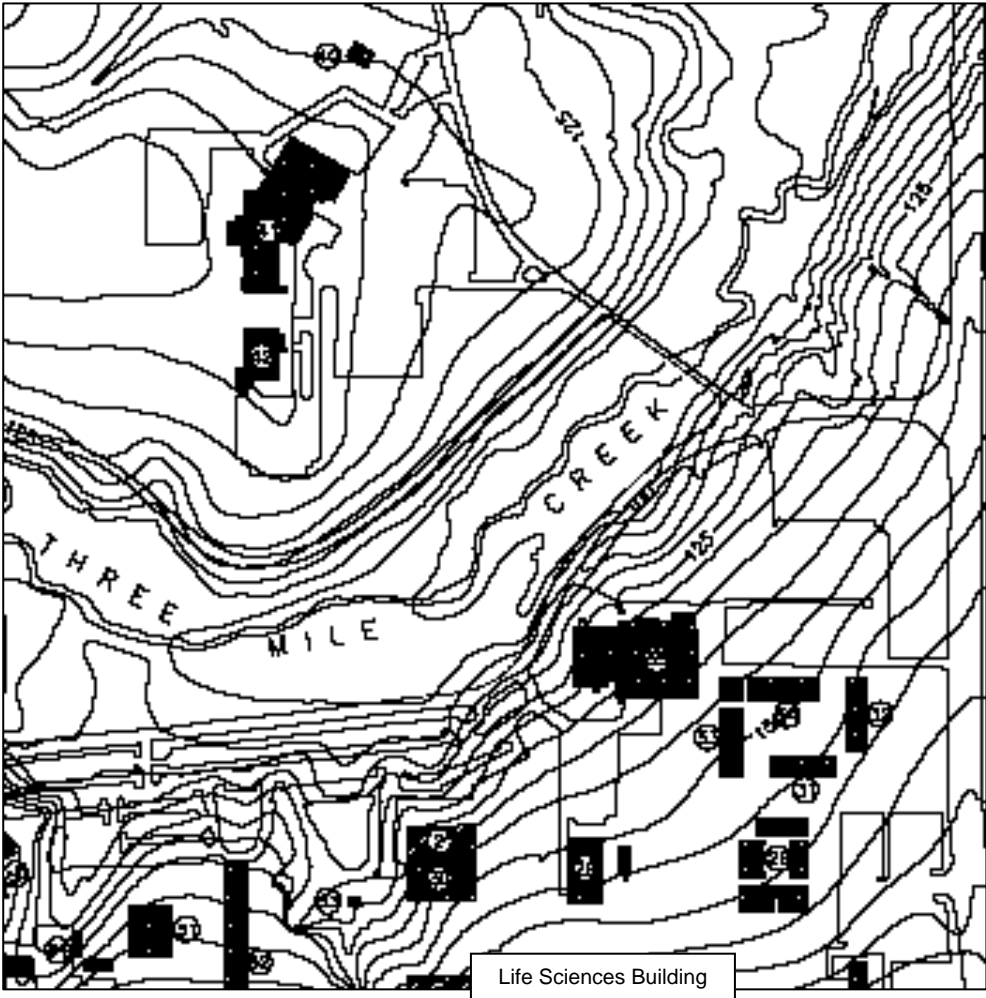
20) Type of material deposited during the Tertiary? _____ [2 points]

Part C: Sequence of Events Cartoons.

Identify the correct order of geological events in the cartoons that occur on the next two pages. On each diagram, rock units are identified by specific letters (A, B, C, D etc), but they are not labeled in any particular order. Geological events (e.g., faulting, dikes, intrusions, folding, unconformities etc.) **must** be identified and listed separately. For unconformities, **distinguish between disconformities, non-conformities and angular unconformities**. List the oldest event first and work your way up toward the top. There should be enough spaces for all of the events. If you have extra spaces left, you may have missed something. Each space is worth 1 point [total points available: 37]

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Bonus Question: You may not be aware of it, but geological topics are common fodder for big-budget Hollywood movies². Unfortunately, the majority suck (e.g., *Jurassic Park II, III, Dante's Peak, Deep Impact*), and the rest really suck (e.g., *The Core, Armageddon, Volcano*). The worst one of all was the *Day After Tomorrow* which involved near spontaneous climatic upheaval. But you know, and this is the really frustrating part of being a geologist and a movie fan, all of these movies do contain a bit of geo-truth. There have been asteroid impacts in the past, there were once great reptiles (dinosaurs) on this planet, volcanoes occasionally do erupt and/or explode, and the climate was much colder in the past. The climate has also been much warmer. As you will eventually hear in GY 112, there were times in the past when there was little or no glacial ice on this planet (at least at the poles). When this occurred, sea level was much higher. Let's consider the following scenario. The glacial ice has melted. Sea level has risen 125 feet. Using the contour map below (stolen from David Allison's website (<http://www.usouthal.edu/geography/allison>)), show how much of the USA campus is flooded by the transgression but highlighting the inundated area (5 points).



² Visit D. Haywick's geo-movie review page for critical assessment of some of Hollywood's biggest (and crappiest films).