GeoLogic Mapping C - Geologic Mapping (C) - Pearl City Invitational - 12-12-2020

This Geologic Map is a compilation of a variety of Geologic Map analysis as listed in the rules.

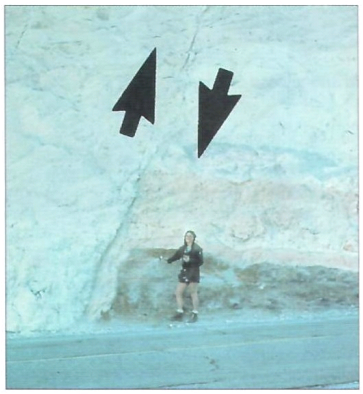
Spelling will count. Incorrect spelling but close to will be given partial points.

You have 50 minutes to complete this test, 5 minutes to photograph/scan cross-section and email it to the address listed.

1. (1.00 pts) Fig 1. This photo of a road cut shows why type of fault in the lower right hand corner?

2. (1.00 pts) Fig 1's fault is caused by what type of stress, force or movement?

3. (1.00 pts) Fig 2. The arrows show direction of movement along this fault. What type of fault is it?

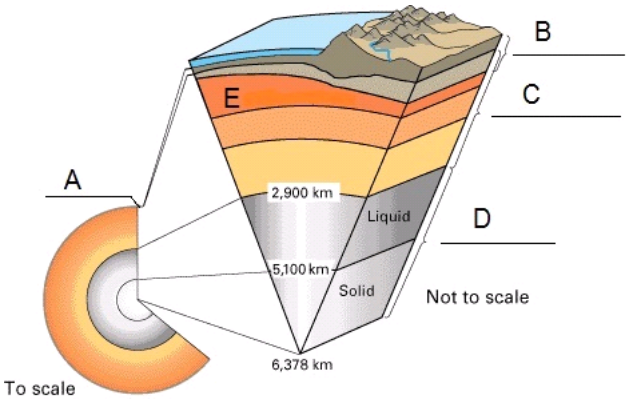


4. (1.00 pts) Fig 2's fault is caused by what type of stress, force or movement?

5. (1.00 pts) Fig 3. What type of fault shown by the large outcrops is in this aerial photo?

6. (1.00 pts) Fig 3's fault is produced by what kind of stress, force or movement?

Fig 4. Use this image to answer the following questions regarding Earth's interior.



7. (1.00 pts) Feature A:

8. (1.00 pts) Feature B:

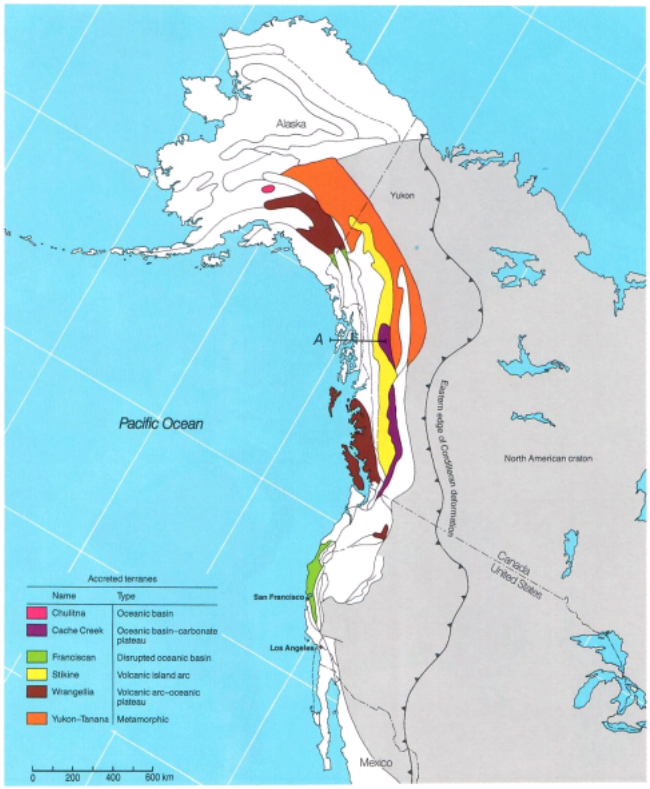
9. (1.00 pts) Feature C:

10. (1.00 pts) Feature D:

11. (1.00 pts) Feature E:

12. (3.00 pts) Explain how seismologist were able to figure out the Earth's interior structures? (Hint: waves)

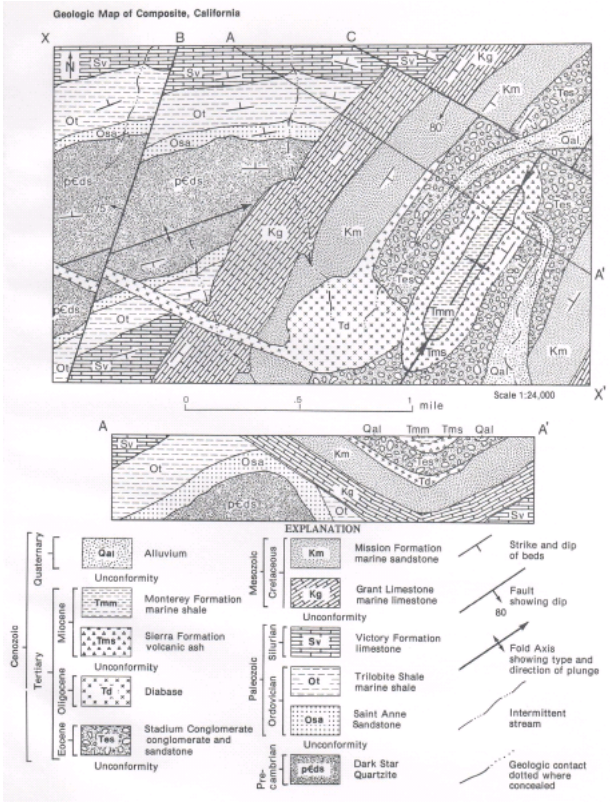
Fig 5. Answer the following questions based on this map.



13. (10.00 pts)
This map shows a number of accreted terranes. Explain, using your knowledge of plate tectonics, what is an accreted terrane and what is shown in this map. Use details from the map to support your explanation.

14. (3.00 pts)
In Image 5, there is a line with arrows. What is this line with arrows indicating? What type of boundary in plate tectonic terminology is occuring. (try to include which plates are traveling in what general directions).

Fig. 6 A hypothetical geologic map of Composite, California. Other than a few stream channels to illustrate Rule of V's, topography has been omitted due to lack of color. Use this map to answer the following questions.



15. (2.00 pts) Explain what is the "Rule of V's" and how it is used?

16. (3.00 pts)
The stream in the center of the map, outcrop Td, crosses Km, Kg, pCds, Osa, Ot, Sv. Explain water flow direction(s) and what is possibly occuring here. What can you reason wha is happening on this map?

17. (1.00 pts) What type of streams are shown on this map?

18. (2.00 pts) There are three major rock families. List one rock family and an example from the map.

19. (2.00 pts) There are three major rock families. List another rock family not listed in previous question and an example from the map.

20. (2.00 pts) There are three major rock families. List another rock family not listed in the previous questions and an example from the map.

21. (2.00 pts) What is the general regional strike of the Paleozoic formations?

22. (2.00 pts) List two general types of structures present on this map?

23. (2.00 pts) What is the major structural pattern on the East side of the map?

24. (2.00 pts) What is the major structural pattern on the West side of the map?

25. (2.00 pts) The contact between the Paleozoic and younger rocks is a(an) _____.

26. (2.00 pts) Which side has been uplifted? (Hint: uplifted side will have more of the older rocks)

27. (2.00 pts) What is the name of the igneous feature that has been bisected along the fault labeled B on the map?

28. (2.00 pts)
Stream distribution and erosion patterns provide additional information about a region. Streams originate in topographically higher areas which generally consist of more resistant rock. What the the two most resistant rocks in this area?

Fig 7. Located in the Black Hills of South Dakota. Use this figure to answer the following questions.

29. (2.00 pts) List the formation ages shown in Fig 7 from youngest to oldest.

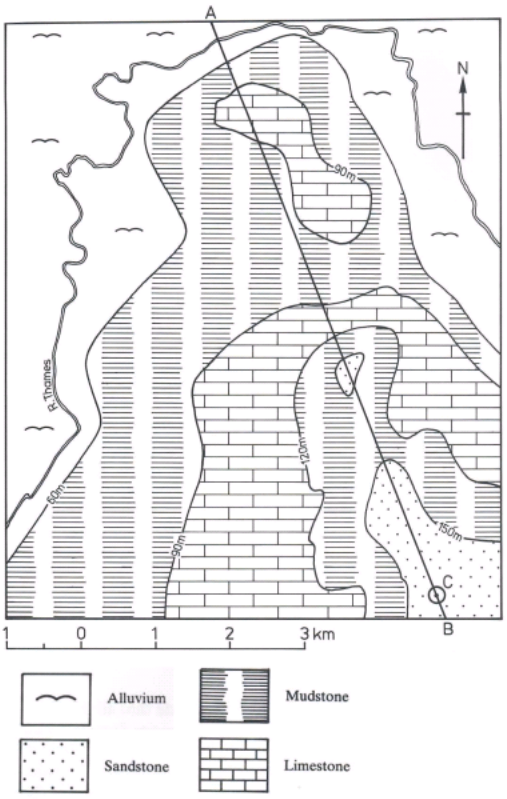
30. (3.00 pts) Fig 7 has an interesting shape or characteristics to it. What is this structure and why do you think this happened?

Fig 8. A travel to England. Geologic Map 1 Cross-Section

Map Information:

A vertical borehole located on a site at point C 170m Above Ordnance Datum (A.O.D.) passed through the following Cretaceous and Jurassic Formations: 0-20 m Lower Greensand, 20-50 m Kimmeridge Clay, 50-80 m Corallian Beds, 80-170 m Oxford Clay. All the bedding planes encountered in the borehole displayed a horizontal attitude. The Geologic Map and key are below.

A Travel to England Map 1



31. (30.00 pts)

Draw a Geologic Cross-Section along the line A-B and on it mark the Formations intersected by the borehole. Graph paper is best to use. Be clear with your drawings.

1. Indicate A-B on cross-section
2. Include Title
3. Include Key with the lithologic units
4. Vertical Scale: 1mm = 5mm (Include written and drawn scale, indicate that is for vertical)
5. Horizontal Scale: Include what you determine from your screen.
6. Show location of Borehole C on cross-section
7. Draw a dashed line to connect outcrops over open valleys
8. Include your elevation points used at the bottom of your cross-section (verification process for assessment, no need to erase)

Email photo or scanned copy of your Cross-Section to:

Team Name/Number/Names etc should also be written on the cross-section. If not identified, it will not be graded.

GeoMaps.SO@gmail.com w/i **5 minutes of official test ending time**. (times will be cross-checked)

Congratulations!

I hope you had fun doing this test and were suitably challenged.