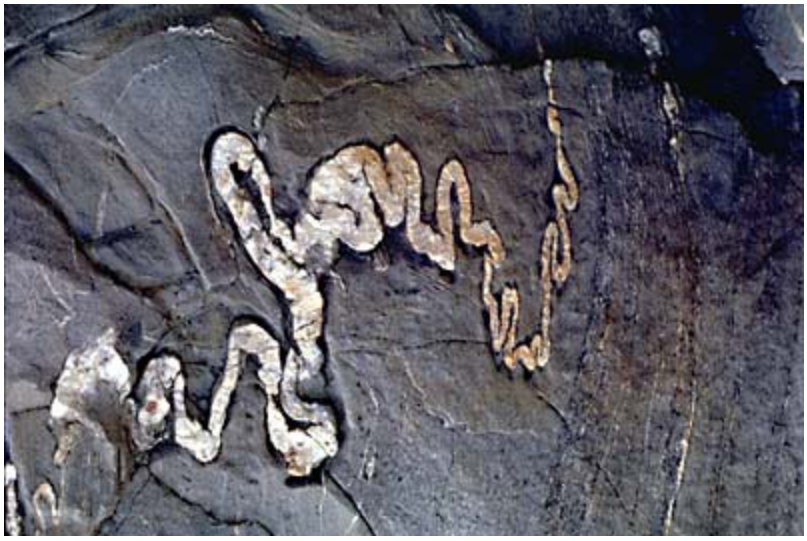
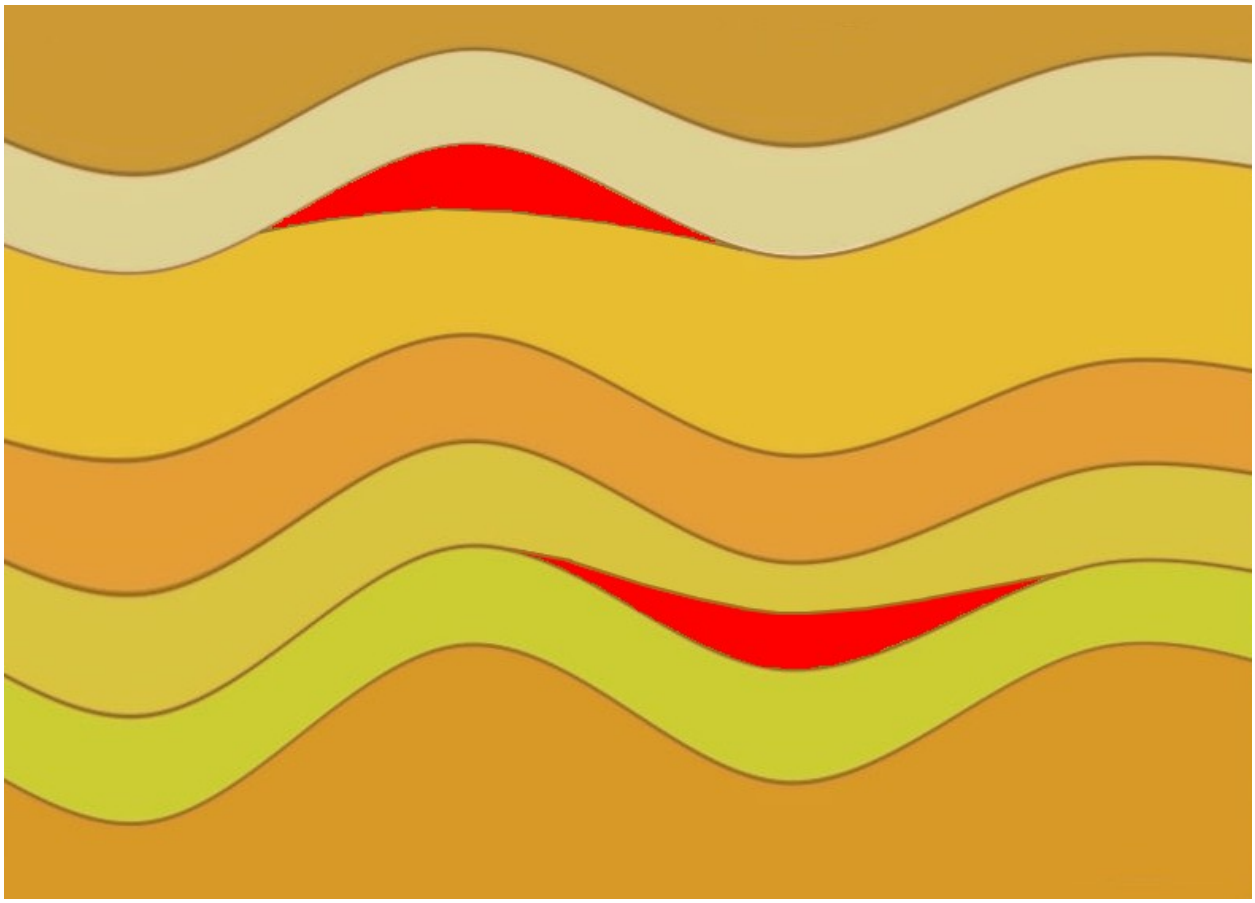
1. In which soil horizon would you be most likely to find fossils? Give the full name and horizon letter.
R-Horizon, the regolith
2. What are Eolian Processes? What environment do they usually occur in?
Erosion caused by wind, deserts
3. How is an unprojected map made? What does it distort?
By treating lat/long as a cartesian grid, it distorts area, distance, and angles
4. What is orthogonal flexure? Name two typical properties of the resultant rock.
Deformation in which lines originally perpendicular to the layer remain so, the rock is usually competent and gently folded
5. What is the typical direction is the vergence of a Z-fold, relative to the foliation of the rock ? Give the answer to the nearest compass azimuth (N E S W) or quadrant, with the bearing of the foliation representing 0 degrees).
NE
6. You are standing on a horizontal surface looking NE when you notice an eroded fold plunging N25W and the broadening in width to your left. Is the intrado or extrado of this fold exposed?
intrado
7. What is the interlimb angle of a mushroom fold?
subzero
8. Which of the following has a (to scale) cross-section most similar to a synclinorium: dome, basin, antiform, synform?
basin
9. What are the three types of magma, by SiO2 content?
Basaltic, Andesitic, Rhyolitic
10. What are the three ways that magma is produced?
decompression melting, transfer of heat, flux melting
11. What is a nuee ardente? (hint: it's a geohazard)
pyroclastic flows, usually emanating from the side of a volcano, containing hot gases, ash, and dense chunks of lava
12. A low-angle reverse fault is a thrust fault. What is the name for a low-angle normal fault?
detachment or denudation fault
13. What is the difference between a generatrix line, hinge line, and crest line?
a generatrix line is the line that defines the surface of a fold (especially conic) when translated, a hinge line is usually only applicable to cylindrical folds, and the crest line is the highest point in the fold. For an upright antiform, the crest line and hinge line are the same, otherwise they are different. Crest lines are not applicable to synforms.
14. What is the difference between an axial surface, axial plane, and axial trace?
An axial surface is the surface running through the center of the fold, and the axial plane is a special case of the axial surface for cylindrical folds. An axial trace is the line formed by the intersection of the topography and axial surface
15. Which is typically made up of more competent rocks: Class 1b or 2 folds?
1b
16. What is an imbricate fan? How is it formed?
A fan-like series of splay faults in thrust systems, they are formed as displacement spreads over large areas of rock
17. What is volume-loss folding? How does it work?
The creation of folds through loss of volume in some areas of bedrock relative to others (causing those areas to subside and produce folds in upper rock layers
. What type of folds are depicted in this folding sequence?



ptygmatic folds

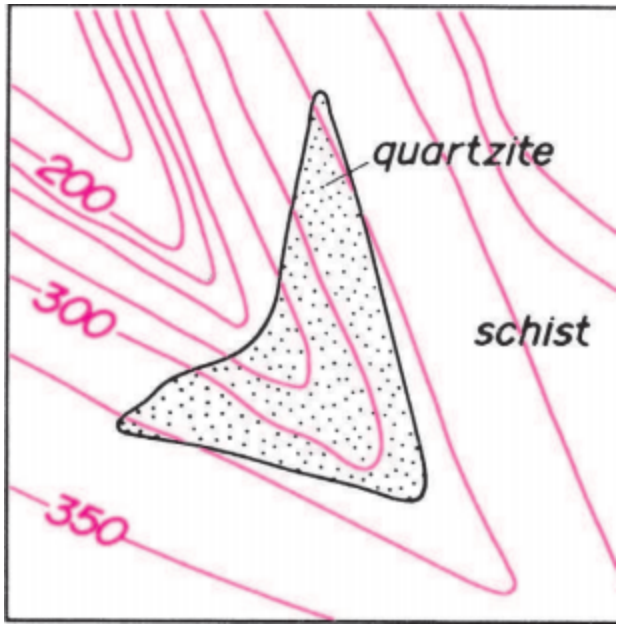
19. What can slickenlines tell the field geologist about the movement of faults?
the line of latest movement (but not the direction along that line!)

20. Explain what is meant by competence.
resistance to deformation



21. There are two possible igneous intrusions shown in red in the above picture, one curved-side-up and the other curved-side-down. Give their respective names.
laccolith, lopolith
22.The top red structure could also be a hydrocarbon trap. If so, what type of hydrocarbon trap would it be?
anticlinal trap
23. What are geoblemes and astroblemes?
an astrobleme is a crater caused by an extraterrestrial rock/projectile, and a geobleme is a crater caused by terrestrial pressure/volcanism
24. Name 2 primary igneous and 2 primary sedimentary structures.
some possible sedimentary structures: bottom markings (inc. flute casts and load casts), graded bedding, cross bedding, channel/scour-and-fill structures
some possible igneous structures: flow-top breccia, vesicles, pillow lava, amygdules, crystal settling, scour-and-fill, columnar jointing
25. What feature of thixotropic clay makes it a potential geohazard?
It dramatically loses viscosity after a slight pressure increase--can cause landslides
26. Give 2 specific features that indicate the presence of a fault, be as specific as possible! Don't just say displacement of rock.
some possible features:
omitted and duplicated layers, strata that don't line up or seem to be tilted along a line, imbricate fills/fans, potential orogenic zones (ie mountains), deformed rocks, oceanic ridges, klippes and fensters, roads that mysteriously stop and start up again 50 feet to the side, Slickensides, breccia, polishing/grooving of the rocks, and mylonite.
27. Give a brief magnetic history of the planet Earth.
the Earth's magnetic axis wobbles, and makes a complete loop around the earth's axis every ~5000 years, it can also go on excursions (fun time for the whole magnetic family!), where it wanders significantly from the geographic pole, or inversions, where the magnetic field reverses, every few thousand years. In the the last 76 million years, 171 inversions have occurred.
28. 
The above image is the map symbol of a geologic structure. What is the structure, and how is it formed?
Boudinage (with attitude of plunge for good measure)! Boudinage occurs when a rigid rock is extended and stretched to break apart its surrounding rock that is less resistant to deformation. The pieces formed are called boudins.
29. Name the 3 types of ocean sedimentary environments.
fondoform, undaform, clinoform
30. A coal seam dips 4/230. The mining company wants to have passages with a slope of at least 3.5 degrees to ensure proper drainage. Give the range of possible azimuths for the passages.
201-259 degrees
31. What is an ophiolite and how are they created?
Ophiolites are bits of ocean crust accreted onto continental terranes, usually during subduction.
32. In what geologic structures are ring faults found?
collapsed calderas and craters
33. An underground passage linking two cave systems follows the line of intersection of the base of a limestone bed and a vertical rock fracture. The bedding in the limestone dips 060/60 and the strike of the fracture is 010. What is the plunge of the passage?
48.07 degrees

34. The map below depicts an outcrop of quartzite. Is there a fold in the image? How do you know? If so, identify it (antiform/synform), and describe the path of the axial trace and hingeline.



There is an antiform, you know because of the curves in the contact when the topography has a constant dip, the hingeline connects the two curves on the sides of the river, the axial trace goes through the center of the quartzite from N to W (assuming up is N).

35. What is the name of a fault whose dip decreases with depth?

Listric Fault