Geological Mapping

Total Points: 120

Multiple Choice (2 points each)

1. A topographic map has a scale of 1:24,000. 1 inch on the map represents which of the following?

    A. 24, 000 feet

    B. 24 miles

    C. 2000 feet

    D. 288 miles

2. An unconformity is present in strata above plutonic rocks. What type of unconformity is it?

    A. Nonconformity

    B. Disconformity

    C. Angular Unconformity

    D. Paraconformity

3. Around when did the Pangaea supercontinent break apart?

    A. 600 million years ago

    B. 300 million years ago

    C. 200 million years ago

    D. 55 million years ago

4. The bedrock of oceanic crust is mostly

    A. Granite

    B. Andesite

    C. Rhyolite

    D. Basalt

5. Which layer of the Earth contains most of the Earth’s volume?

    A. Crust

    B. Mantle

    C. Outer Core

    D. Inner Core

6. Which of the following shapes best models the surface of the Earth?

A. Sphere

B. Oblate ellipsoid

C. Geodetic solid

D. Geovoid

7. Which of the following describes process the rise of the Earth's crust after being depressed by ice sheets?

A. Gelifluction

B. Continental Uplift

C. Solifluction

D. Isostatic Rebound

8. The lithospheric plates move at a rate of

A. Several kilometers per year

B. Several meters per year

C. Several centimeters per year

D. It cannot be determined

9. Who is the father of modern geology?

A. James Hutton

B. Charles Lyell

C. Charles Darwin

D. Alfred Wegner

10. What type of unconformity might not show based only on field observation?

A. Angular unconformity

B. Disconformity

C. Nonconformity

D. Paraconformity

11. A sheet intrusion of magma that causes overlying strata to bulge upward into a dome-like form is called?

A. Sill

B. Dike

C. Batholith

D. Laccolith

12. Which of the following is true regarding P waves and S waves?

A. S waves travel faster than P waves

B. P waves can only travel through solids

C. Both S and P waves are types of body waves

D. P waves are shear waves transverse in nature

13. what evidence supports the interpretation that the Earth's outer core is liquid?

A. P waves accelerate at the boundary between the mantle and outer core

B. S waves shadow zone

C. P waves propagate faster than S waves

D. S and P waves do not travel in the outer core

14. The San Andreas Fault is an example of what kind of fault?

A. Strike-Slip

B. Dip-Slip

C. Oblique-Slip

D. Listric

15. Which of the following best describes the San Andreas Fault?

A. Wrench

B. Thrust

C. Left-Lateral

D. Right-Lateral

16. In an anticline, it was determined that the layers in the center were the oldest. This is due to which geological principle?

A. Principle of Superposition

B. Principle of Original Horizontality

C. Principle of Lateral Continuity

D. Principle of Cross-cutting relationships

17. Enchanted rock is an example of a(n)

A. Sill

B. Dike

C. Batholith

D. Laccolith

18. Soil creep is best seen through which process?

A. Solifluction

B. Liquifaction

C. Isostacy

D. Landslides

19. The Universal Transverse Mercator (UTM) coordinate system is split into how many zones?

A. 12

B. 24

C. 36

D. 60

20. A quadrant bearing is listed as S15°W. What is the azimuthal bearing?

A. 15°

B. 105°

C. 195°

D. 255°

21. Which of the following describes the angle a stratum tilts below horizontal?

A. Strike

B. Dip

C. Dip Direction

D. Rake

22. What parameter would you get wrong if you measured the apparent dip of a stratum instead of true dip?

A. Location

B. Strike

C. Cleavage

D. Thickness

23. Deep sea trenches generally occur

A. between divergent lithospheric plates

B. along the crest of rift valleys

C. above rising mantle plumes

D. along the margins of some ocean basins

24. The strike of a bedding of rock is northeast and the dip is 30°. Which is a possible dip direction?

A. North

B. Southeast

C. Southwest

D. South

25. The theory of continental drift was fully developed by who?

A. James Hutton

B. Charles Lyell

C. Charles Darwin

D. Alfred Wegner

26. Based on the geologic time scale, which period is the oldest?

A. Carboniferous

B. Quaternary

C. Jurassic

D. Permian

27. Which of the following was not a supercontinent/hypothesized supercontinent?

A. Kenorland

B. Protasia

C. Rodinia

D. Pannotia

28. Which of the following best describes a fold in which one limb is overturned?

A. Monocline

B. Chevron

C. Recumbent

D. Disharmonic

29. Gentle folds have interlimb angles between

A. 120-180°

B. 70-120°

C. 30-70°

D. 0-30°

30. Which of the following best describes a layer of rock that convexes upward?

A. Syncline

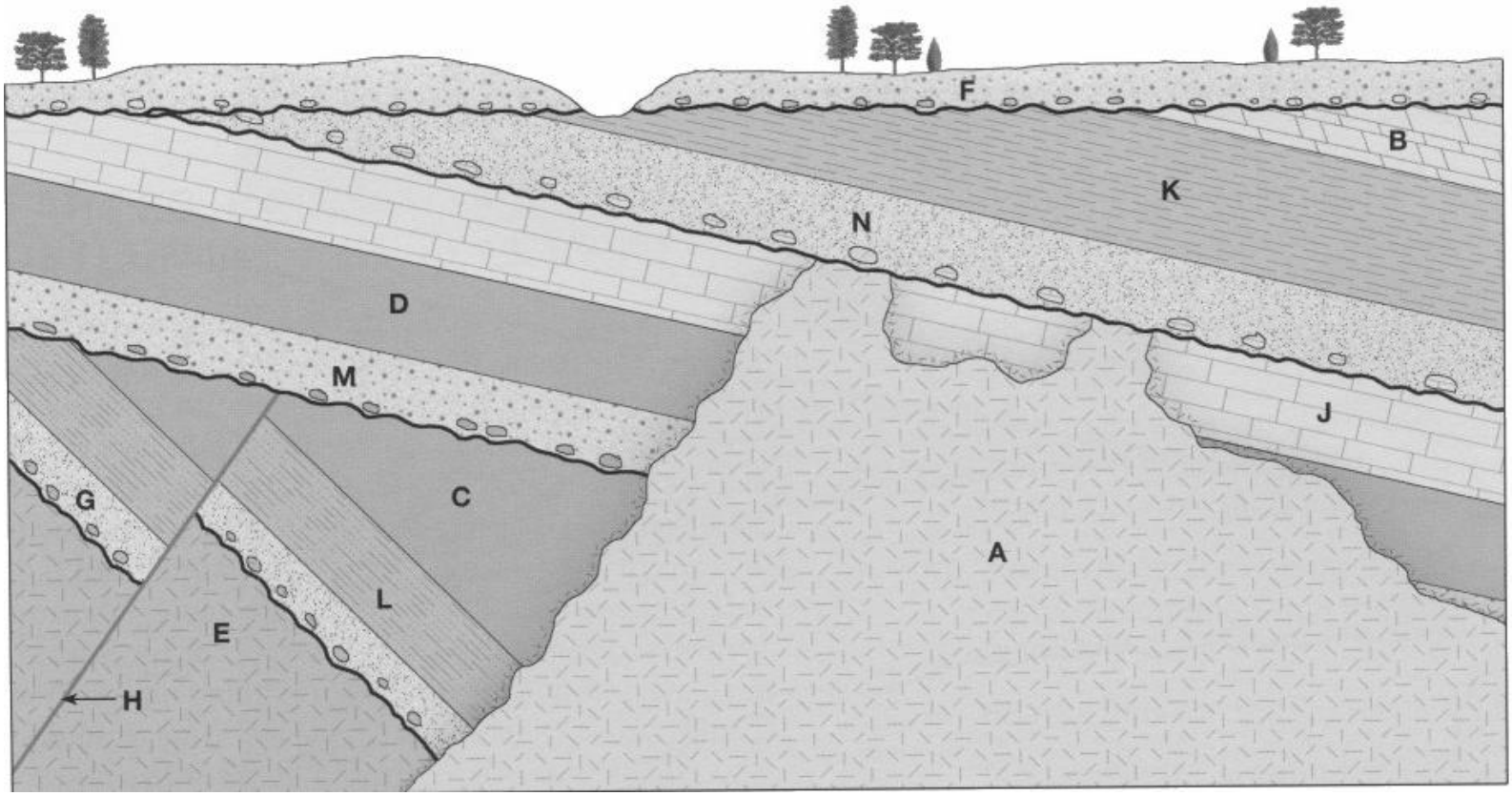
B. Anticline

C. Homocline

D. Basin

Short Answer

31. Order the layers below. There is no letter I. (7 pts)



Youngest

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Oldest

32. If in the cross section above, what type of unconformity is present between layers G and E, if layer E is made of igneous rock? (2 pts)

33. What type of unconformity is present between layers F and B? (2 pts)

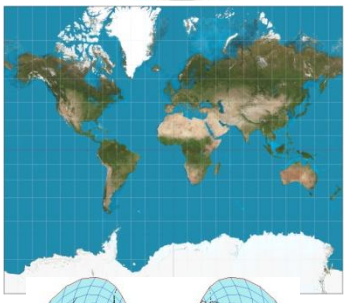
34. In which rock layer are fossils LEAST likely to be found? (2 pts)

35. Name the type of each projection. Projection types are given below (10 pts)

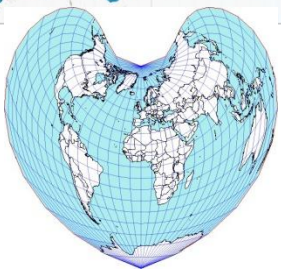
Cylindrical Conical Planar Pseudocylindrical Pseudoconical Pseudoazimuthal

a) _____

b) _____

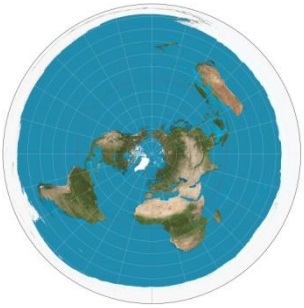


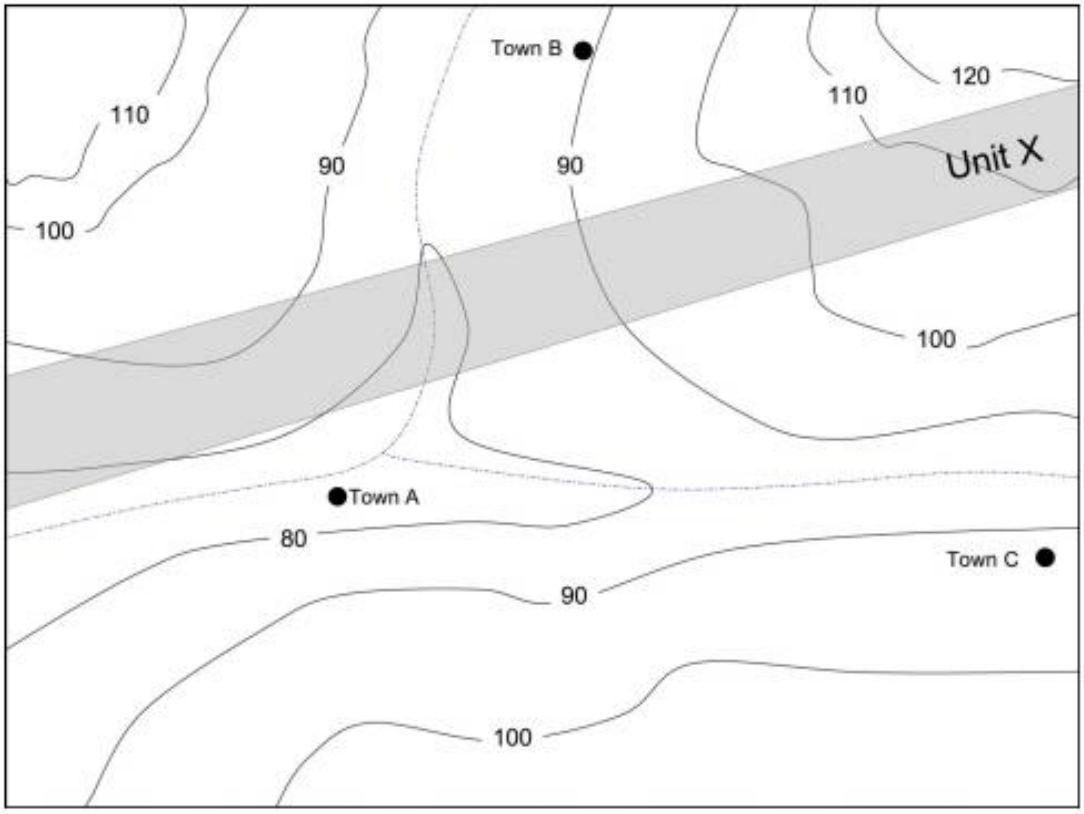
c) _____



d) _____

e) _____

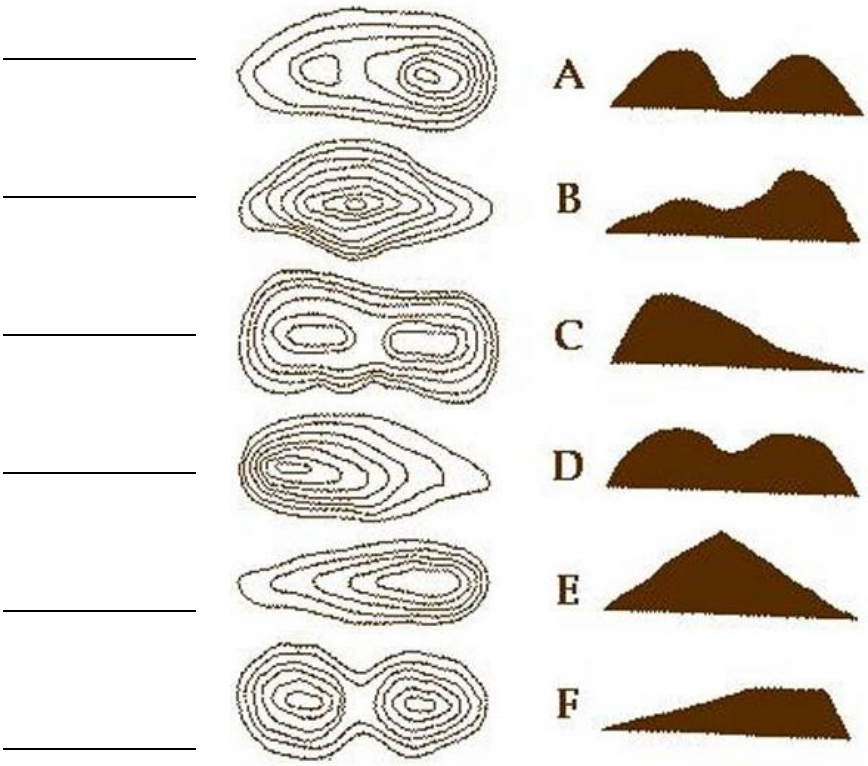


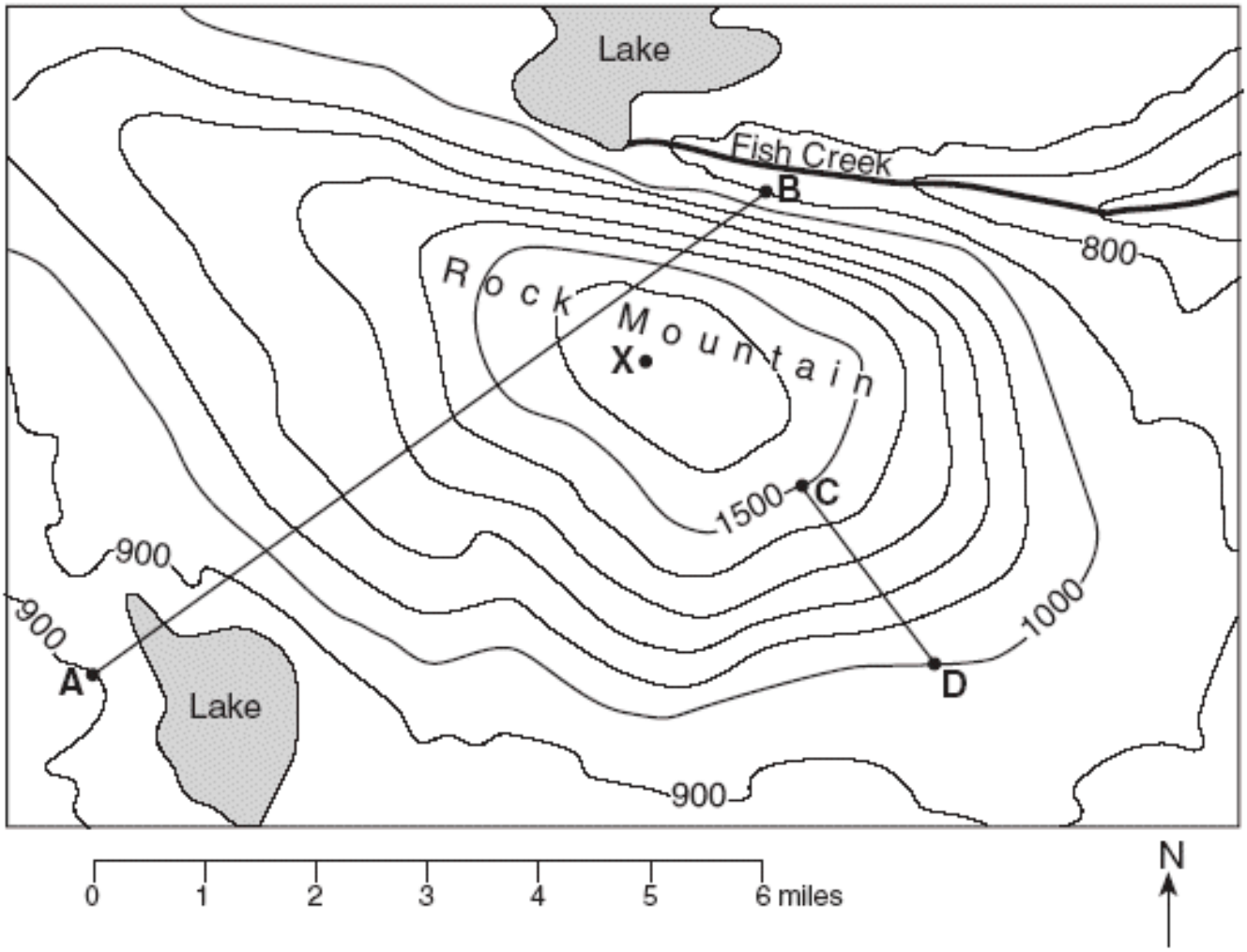


36. Based on the map signature above, what is the dip angle of Unit X? (2 pts)

37. Of the three towns labeled, which has the highest chance of flooding? (2 pts)

38. Match the terrain profiles to their correct letter (6 pts)





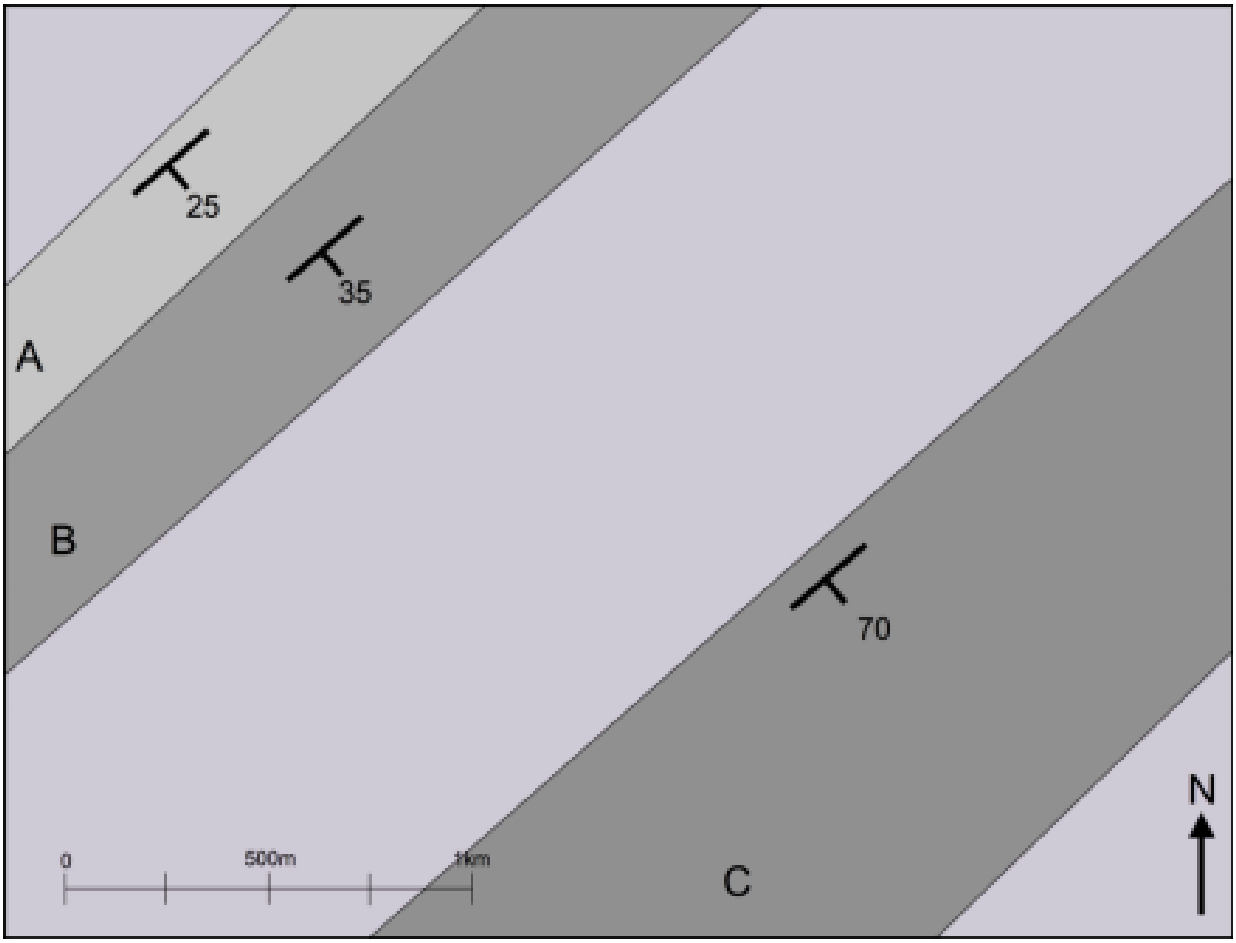
The numbers on the contour lines represent number of meters

39. What is the contour interval? (2 pts)

40. What is a possible elevation level of point X? (2 pts)

41. Construct a topographic profile from point A to point B. Clearly mark elevations on the vertical scale. (5 pts)

A _____ B



42. Calculate the bed thickness of units A, B, and C. Show your work in the space provided. (9 points)

43. You are trying to find the true dip of a bedding of rock in a canyon, but are unable to reach the rock to measure it. Instead you find two outcrops, each with an apparent dip. Using the stereonet and tracing paper, use the given strikes and apparent dips to find the true strike and dip of the bed. Turn in tracing paper with exam.

Apparent Dips: 082°29 and 166°33

What are the strike, dip, and dip direction? (9 points)