

**Weathering – Practice Questions and Answers**  
**Revised August 2007**

1. The process by which Earth material is broken down in situ into smaller pieces is called \_\_\_\_\_.
2. The chemical alteration of Earth materials brought on by reactions with some fluid or gas phase while at the Earth's surface is called \_\_\_\_\_.
3. A joint is a surface across which Earth material has lost cohesion, and across which \_\_\_\_\_ displacement has occurred.
4. A set of joints that parallel the land surface are probably \_\_\_\_\_ or \_\_\_\_\_ joints.
5. Joints that form parallel to some applied tectonic pressure are likely to be \_\_\_\_\_ joints.
6. The weathering process by which blocks bounded by joint surfaces are reduced to spheroidal shapes is called \_\_\_\_\_.
7. When water freezes its volume increases by as much as \_\_\_\_\_.
8. \_\_\_\_\_ is produced by the expansion of water upon freezing.
9. Root growth enlarges joint openings and is therefore a process associated with \_\_\_\_\_.
10. During transportation by wind, water, or ice, particles bounce and are scrapped against other. This process is referred to as \_\_\_\_\_.
11. When blocks of solid material are broken down into smaller and smaller pieces the overall \_\_\_\_\_ is increased.
12. When surface area increases chemical reactivity likely \_\_\_\_\_.
13. Carbonic acid forms when CO<sub>2</sub> (carbon dioxide) is mixed with \_\_\_\_\_.
14. Brick red colors in weathered rock likely indicate the presence of \_\_\_\_\_.
15. If calcite is introduced to significant quantities of rain water mixed with CO<sub>2</sub> (carbon dioxide), then it will \_\_\_\_\_.
16. Earth materials weather at different rates. The previous statement refers to the process of \_\_\_\_\_.

17. In the following photograph what are the surfaces called that bound the tabular sheets of granite paralleling the land surface (i.e., the surfaces that the white arrows point to)?



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18. In the following photograph there are two different sets of joints. The black arrows point to examples of one set while the red arrows point to the other. What are the surfaces called that the black arrows point to? What are the surfaces called that the red arrows point to?

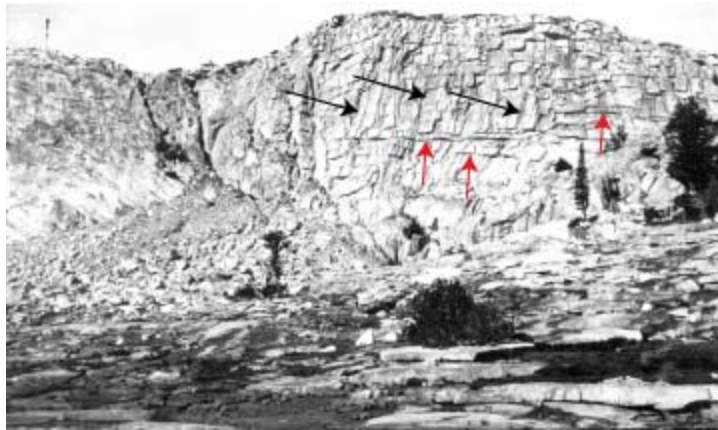


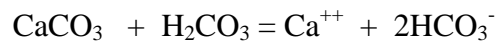
Photo from USGS - ID. Calkins, F.C. 333 cfc00333  
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19. In the following photograph, what is the name of the process that produced the large spherical shaped feature that the arrow points to?



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20. If the following reaction goes from left to right, then what weathering process is occurring?



21. What is the name of the ionic molecule represented by  $\text{HCO}_3^-$ ?

22. What is  $\text{H}_2\text{CO}_3$ ?

23. What mineral is represented by  $\text{CaCO}_3$ ?

24. What weathering process is represented by the following chemical reaction?



25. What mineral has the formula  $\text{Fe}_2\text{O}_3$ ?

26. What is the oxidation state of iron in  $\text{Fe}_2\text{O}_3$ ?

27. Hematite is a \_\_\_\_\_ belonging to which of the following groups?

- (A) Carbonates
- (B) Halides
- (C) Phosphates
- (D) Oxides
- (E) Sulfates

28. Calcite is a \_\_\_\_\_ belonging to which of the following groups?

- (A) Carbonates
- (B) Halides
- (C) Phosphates
- (D) Oxides
- (E) Sulfides

## 29. **Answers**

1. physical weathering
2. chemical weathering
3. imperceptible
4. expansion, sheeting
5. extension
6. spheroidal weathering
7. 9 percent
8. frost wedging
9. physical weathering
10. abrasion
11. surface area
12. increases
13. rain water
14. hematite
15. dissolve
16. differential weathering
17. exfoliation sheets or pressure-release joints
18. black arrows point to extension joints, red arrows point to exfoliation (pressure-release) joints
19. spheroidal weathering
20. calcite dissolves so the process is dissolution
21. bicarbonate
22. carbonic acid
23. calcite
24. oxidation
25. hematite
26. +3
27. non-silicate, (D) oxides
28. non-silicate, (A) carbonates