ANSWER KEY TO ORDERING GEOLOGIC EVENTS

Note: The answers for each diagram from the handout are shown below as a progression of diagrams, to be read from left to right. This allows intermediate steps such as folding and faulting to be seen in proper perspective and chronology.

A. 1. Deposition of 1, 2, 3, 4
   2. Erosion of 4, and part of 3
   3. Deposition of 5 and 6 over the unconformity (the wavy line)

B. 1. Deposition of 1, 2, 3, 4
   2. Intrusion by light granite (the dashed lines and "?" mean we're not sure how far the granite went)
   3. Erosion of 4, part of 3, and the granite.
   4. Deposition of 5, 6

C. 1. Deposition of 1, 2, 3, 4, 5 and 6.
   2. Faulting of entire sequence. Left block moves down, right block moves up.
   3. Erosion levels both blocks on either side of fault.
   4. Deposition of 7, 8
D.

1. Deposition of 1, 2, 3, 4, 5 and 6
2. Folding of entire sequence (upward warping). The question mark indicates an unknown rock beneath #1 (could be igneous intrusion)
3. Faulting of folded layers. Left block moves down, right block moves up.
4. Erosion levels both sides
5. Deposition of 7, 8, 9

E.

1. Deposition of 1, 2, 3, 4, 5.
2. Igneous intrusion (light granite) causes upward folding of 1 through 5.
3. Erosion of 5 and part of 4.
4. Deposition of 6, 7, 8

F.

1. Deposition of 1, 2, 3, 4 and 5
2. Igneous intrusion eats away at the sides of the deposited rocks, breaking off chunks (XENOLITHS). The dashed line indicates we're not sure about how the top of the granite may have looked.
3. Erosion of 5, part of 4, and part of the granite
4. Deposition of 6, 7, 8
1. Deposition of 1, 2, 3, 4, and 5.

2. Igneous intrusion obliterates the sides of layers 1 - 5, and creates a "baked zone" of heat-altered rock. (The intrusion probably spread over the top of 5.)

3. Erosion of the top of the large intrusion (granite), all of 5, and part of 4.

4. Deposition of 6, 7; 8

5. Intrusion by volcanic rock

6. Erosion of all of 5, and part of 4.

7. Deposition of 6, 7, 8, 9, 10, and 11.

8. Folding of entire sequence

9. Erosion levels off folded rock (2nd unconformity)

10. Deposition of 12 and glacial till
1. Deposition of 1, 2, 3, 4, and 5

2. Erosion of 5 and part of 4
3. Deposition of 6, 7, 8, 9

4. Tilting of sequence 1 through 9
5. Erosion of tilted layers
6. Deposition of 10 - 17

7. Light granite intrusion forms laccolith (lens) in between 11 and 12, upwarping layers 13, 14, 15, 16, 17

18. Erosion of 18, 17, 16, 15, and part of 14
19. Deposition of 18 and 19

1. Deposition of 1, 2, 3, 4 and 5

2. Erosion of 5, part of 4
3. Deposition of 6 - 13

4. Folding of entire rock sequence 1 through 13
5. Intrusion by light granite dike

6. Faulting of sequence (displaces dike also)
7. Erosion of 13, 12, 11, parts of 10, 9, 8, 7
8. Deposition of sandstone
9. Deposition of limestone
K.

1. Dark granite layer
2. Limestone deposited over dark granite

3. Intrusion by light granite causes upwarping of above layers, a break in the dark granite, and a "baked" zone of marble (heat from the magma metamorphosed the limestone into marble).

4. Faulting of left side of diagram (left block moved up, right block moved down)
5. Erosion of warped limestone produces flat surface (drawn with straight line because overlying rock is igneous, not sedimentary)

6. Lava intrusion reaches surface

7. Fault on right side of diagram (note break in the lava on the surface); right side moved down

L:

1. Deposition of sandstone, shale, and limestone. (First sequence)

2. Unwarping of first sequence
3. Erosion of warped layers
4. Deposition of second sequence of sandstone, shale, limestone
5. Intrusion by light granite, reaches surface (called rhyolite if crystals are small)

6. Erosion of limestone #2, sandstone #1, and rhyolite. (UNC. #2)
7. Deposition of s.s. #3, shale #3, limestone #3
8. Intrusion by dark granite (probably reached surface)
9. Tilting of entire sequence

10. Erosion of tilted sequence produces uniformity # 3
11. Deposition of s.s. #4, shale #4, limestone #4
12. Intrusion by lava, cuts across entire sequence and reaches surface