

PHYSICAL SETTING CHEMISTRY

Wednesday, December 19, 2018 — 8:00 a.m. to 2:47 p.m., only

Answer Key

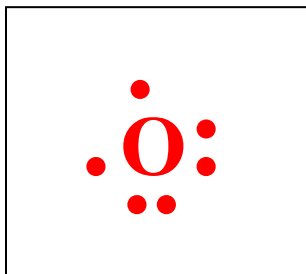
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|--------|---------|---------|---------|
| 1. (2) | 9. (1) | 17. (2) | 25. (4) |
| 2. (1) | 10. (2) | 18. (3) | 26. (3) |
| 3. (3) | 11. (2) | 19. (1) | 27. (4) |
| 4. (3) | 12. (3) | 20. (2) | 28. (1) |
| 5. (4) | 13. (3) | 21. (4) | 29. (2) |
| 6. (2) | 14. (1) | 22. (2) | 30. (1) |
| 7. (1) | 15. (3) | 23. (4) | 31. (1) |
| 8. (3) | 16. (1) | 24. (4) | |

32. As and Sb have the same number of valence electrons.

33. The sodium ion is smaller than the sodium atom because to form an ion Na atoms lose one electron.

34. Double nonpolar covalent bond.

35. LED for one oxygen atom



36. The covalent bond is being broken and bond breaking is always endothermic (always requires energy).

37 Potential energy: Remains largely unchanged.

Average kinetic energy: Increases.

38 8.0 kJ

39 The heat of vaporization of water (2260 J/g) is much greater than the heat of fusion of water (334 J/g).

40 Show a numerical setup.

$$10.01 \text{ u} (0.1991) + 11.01 \text{ u} (0.8009)$$

41 Show a numerical setup.

$$q = m C \Delta T = 30.1 \text{ g} (0.385 \text{ J/g}\cdot\text{K}) (33 - 21)\text{K}$$

42 10 neutrons

43 The student diagram indicates a covalent compound. Adding charges would show an ionic bond.
