

## Module 04 Baseline Quiz

Read sections 7.1 - 7.6

1. What is electric potential energy?
  - a) It is the negative of the work done by the electric force.
  - b) The kinetic energy of an electric charge in motion.
  - c) The energy of an electron at rest.
  - d) None of the above.
2. Which of the following is a definition of electric potential difference?
  - a) The change in potential energy of a charge  $q$  moved between two points, divided by its charge.
  - b) The change in potential energy of a charge  $q$  moved between two points, multiplied by its charge.
  - c) The change in electric potential energy of a charge  $q$  moved between two points.
  - d) The difference in voltage of two battery terminals.
  - e) None of the above.
3. The electric potential energy of two negative point charges placed some distance  $d$  apart is:
  - a) positive
  - b) negative
  - c) zero
  - d) None of the above.
4. What is an electron-volt?
  - a) A unit of electric potential.
  - b) A unit of energy.
  - c) A unit of charge.
  - d) None of the above.
5. Is the electric force a conservative force?
  - a) yes
  - b) no
  - c) None of the above.
6. Which of the following formulas gives the approximate electric potential of an electric dipole with charge  $q$  and length  $d$ , at some distance  $r$  away?

- a)  $V = \frac{k\vec{p} \cdot \hat{r}}{r}$
  - b)  $V = \frac{kqd \cos \theta}{r^2}$
  - c)  $V = \frac{kqd \cos \theta}{r}$
  - d)  $V = \frac{k\vec{p} \cdot \vec{r}}{r^2}$
  - e) None of the above.
7. What is the electric potential difference between opposite sides of a conducting sphere of diameter  $D$  in electrostatic equilibrium, placed in a uniform electric field with strength  $E$ .
- a)  $ED$
  - b)  $\pm ED$
  - c) zero
  - d) It depends on whether or not there is excess charge on the sphere.
  - e) None of the above.
8. The electric potential due to multiple point charges can be found
- a) by adding the potential due to each charge separately as vectors.
  - b) by adding the potential due to each charge separately as scalars.
  - c) only when the charges are positive.
  - d) actually, it cannot be determined.
  - e) None of the above.
9. How is the electric field related to electric potential?
- a) the field is proportional to the integral of the potential.
  - b) the field is proportional to the derivative of the potential.
  - c) the field is proportional to the potential plus a constant.
  - d) None of the above.