

1. Calculate the gravitational potential energy of each object shown (all are in the earth's gravitational field—use $g = 10 \text{ m/s}^2$).

a. b. c. d.

2. Gravitational potential indicates the amount of potential energy each unit of mass has at a given point in a gravitational field. Calculate the gravitational potential of each object shown.

a. b. c. d.

3. Therefore, each kilogram of mass has ______ of potential energy when

placed at 2 m above the surface in the earth's gravitational field, and therefore loses

_____ of potential energy as it falls 2 m.

II. Electric Potential



4. Calculate the electric potential energy of each charge shown (all are immersed in a 1,000,000 N/C electric field).

a. b. c. d.

5. Electric potential indicates the amount of potential energy each unit of charge has at a given point in an electric field. Calculate the electric potential of each charge shown.

a. b. c. d.

6. Therefore, each coulomb of charge has ______ of potential energy when

placed at the positive plate (2 cm from the negative plate), and therefore loses

______ of potential energy as it "falls" across that 2 cm gap.

7. If a single coulomb of charge passes from the + terminal to the – terminal of a 12 V battery, how much energy does it give up?

1a.0.2 J b.10 J c.20 J d.400 J 2 a-d.20 J/kg 3.20 J; 20 J 4a.40 μJ b.6 mJ c.20 mJ d.100 J 5 a-d.20 kV 6.20 kJ; 20 kJ 7.12 J