Standardized Test Prep

MULTIPLE CHOICE

1. Which of the following equations correctly describes Faraday's law of induction?

A. $\text{emf} = -N\dfrac{\Delta(AB\tan\theta)}{\Delta t}$

B. $\text{emf} = N\dfrac{\Delta(AB\cos\theta)}{\Delta t}$

C. $\text{emf} = -N\dfrac{\Delta(AB\cos\theta)}{\Delta t}$

D. $\text{emf} = M\dfrac{\Delta(AB\cos\theta)}{\Delta t}$

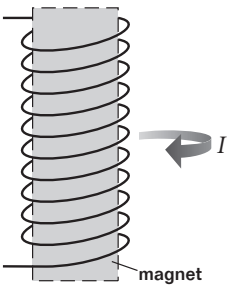
2. For the coil shown in the figure below, what must be done to induce a clockwise current?

F. Either move the north pole of a magnet down into the coil, or move the south pole of the magnet up and out of the coil.

G. Either move the south pole of a magnet down into the coil, or move the north pole of the magnet up and out of the coil.

H. Move either pole of the magnet down into the coil.

J. Move either pole of the magnet up and out of the coil.



3. Which of the following would *not* increase the emf produced by a generator?

A. rotating the generator coil faster

B. increasing the strength of the generator magnets

C. increasing the number of turns of wire in the coil

D. reducing the cross-sectional area of the coil

4. By what factor do you multiply the maximum emf to calculate the rms emf for an alternating current?

F. 2

G. $\sqrt{2}$

H. $\dfrac{1}{\sqrt{2}}$

J. $\dfrac{1}{2}$

5. Which of the following correctly describes the composition of an electromagnetic wave?

A. a transverse electric wave and a magnetic transverse wave that are parallel and are moving in the same direction

B. a transverse electric wave and a magnetic transverse wave that are perpendicular and are moving in the same direction

C. a transverse electric wave and a magnetic transverse wave that are parallel and are moving at right angles to each other

D. a transverse electric wave and a magnetic transverse wave that are perpendicular and are moving at right angles to each other

6. A coil is moved out of a magnetic field in order to induce an emf. The wire of the coil is then rewound so that the area of the coil is increased by 1.5 times. Extra wire is used in the coil so that the number of turns is doubled. If the time in which the coil is removed from the field is reduced by half and the magnetic field strength remains unchanged, how many times greater is the new induced emf than the original induced emf?

F. 1.5 times

G. 2 times

H. 3 times

J. 6 times