1. What is the magnetic field due to a wire of infinite length carrying a current I, a distance a away from the wire?

   A) $\mu_0 I/2\pi a$

   B) $\mu_0 I/4\pi a$

   C) $\mu_0 I$

   D) $2\pi a \mu_0 I$

   E) $4\pi a \mu_0 I$

2. What is the magnetic field due to a circular loop of wire carrying a current I and having a radius R at the center of the loop?

   A) $\mu_0 I/4\pi R$

   B) $\mu_0 I/4R$

   C) $\mu_0 I/2\pi R$
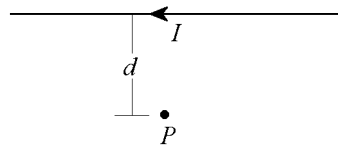
   D) $\mu_0 I/2R$

   E) $2\pi \mu_0 I R$

3. The Biot-Savart Law is used to

   A) determine the electric field created by individual point charges

   B) determine the electric field created by an electric current

   C) determine the magnetic field created by individual point charges

   D) determine the magnetic field created by an electric current

   E) determine the force field created by an electric current

4. What is the magnitude of the magnetic force on a semicircle of wire of radius r carrying a current I in the plane of the page due to a uniform magnetic field B pointing out of the page?

   A) $\tfrac{1}{2} rIB$

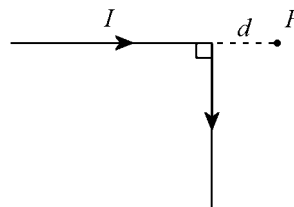   B) rIB

   C) $2rIB$

   D) $4rIB$

   E) $6rIB$

5.

   What is the magnitude and direction of the magnetic field at point P due to the segment of wire above carrying current I?

   A) $\mu_0 I/2\pi d$ out of the page

   B) $\mu_0 I/2\pi d$ into the page

   C) $\mu_0 I/4\pi d$ out of the page

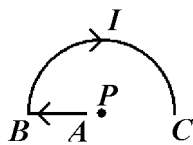   D) $\mu_0 I/4\pi d$ into the page

   E) $\mu_0 I/d$ out of the page

6.

   What is the magnitude and direction of the magnetic field at point P due to the segment of wire carrying current I?

   A) $\mu_0 I/2\pi d$ out of the page

   B) $\mu_0 I/2\pi d$ into the page

   C) $\mu_0 I/4\pi d$ out of the page

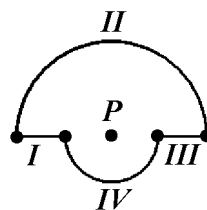   D) $\mu_0 I/4\pi d$ into the page

   E) $\mu_0 I/d$ out of the page

7.

What is the magnetic field at point *P* due to the segment of wire *AB* carrying current *I?*

A) Zero

B) $2\mu_0 Ir$

C) $\mu_0 I/r$

D) $\mu_0 I/2r$

E) $\mu_0 I/4r$

8.

Which segments of the wire affect the magnetic field at point *P* for the above wire?

A) I and III

B) II and IV

C) I, II and III

D) II, III and IV

E) I, II, III and IV

9. Which of the following laws can be used to calculate the magnetic field from an electric current distribution?

A) Gauss' Law

B) Conservation of Charge

C) Biot-Sarvart Law

D) Faraday's Law

E) Gauss's Law for Magnetism

1.   A

2.   D

3.   D

4.   C

5.   B

6.   C

7.   A

8.   B

9.   C

Name _____   Class _____   Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____