1. . The pointer on a compass is the north pole of a small magnet. If a compass were placed next to a bar magnet, as shown above, in what direction would the pointer point?  (A)  (B)  (C)  (D)  (E) 

2. . A positively charged particle in a uniform magnetic field moves in a circular path in the clockwise direction, parallel to the plane of the page. In what direction do the magnetic field lines point? (A) Out of the page (B) Into the page (C) To the left (D) To the right (E) In a clockwise pattern parallel to the plane of the page

3. . What should one do to maximize the magnitude of the magnetic force acting on a charged particle moving in a magnetic field? I. Maximize the strength of the magnetic field II. Minimize the particle’s velocity III. Ensure that the particle is moving in the same direction as the magnetic field lines (A) I only (B) I and II only (C) I and III only (D) II and III only (E) I, II, and III

4. . What is the magnetic force experienced by a negatively charged particle of 1.0 C that is moving upward at a velocity of 2.0 x 103 m/s in a magnetic field of strength 4.0 x 10-4 T, directed into the page?  (A) 0.8 N to the left (B) 0.8 N to the right (C) 2.0 10-7 N to the left (D) 2.0 10-7 N to the right (E) 5.0 106 N to the left

5. . A charged particle is moving in a circular orbit in a magnetic field. If the strength of the magnetic field doubles, how does the radius of the particle’s orbit change? (A) It is quartered (B) It is halved (C) It is unchanged (D) It is doubled (E) It is quadrupled

6. . Which of the following is not a possible trajectory of a charged particle in a uniform magnetic field?(A)  (B)  (C)  (D)  (E) 

7. . A positively charged particle of 2.0 C moves upward into an area where both a magnetic field and an electric field are acting. The magnetic field has a magnitude of 4.0 x 10-4 T and the electric field has a magnitude of 0.1 N/C. At what velocity must the particle be moving if it is not deflected when it enters this area?  (A) 4.0 x 10-3 m/s (B) 125 m/s (C) 250 m/s (D) 500 m/s (E) The particle will be deflected to the left regardless of its velocity

8. . A current-carrying wire in a magnetic field is subject to a magnetic force. If the current in the wire is doubled, what happens to the magnetic force acting on the wire? (A) It is quartered (B) It is halved (C) It is unchanged (D) It is doubled (E) It is quadrupled

9. . Two wires carry current in opposite directions. Which of the following graphs represents the magnetic force acting on each wire?  (A)  (B)  (C)  (D)  (E) There is no net force acting on either wire

10. . A current-carrying wire passes through a uniform magnetic field, as shown above. At which point is the magnetic field the strongest?  (A) A (B) B (C) C (D) D (E) The magnetic field strength is uniform throughout