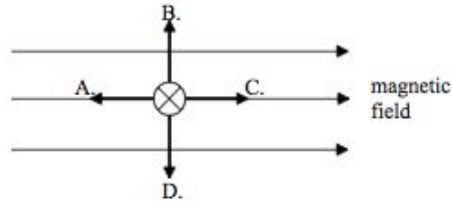


# Magnetic Fields and Forces Paper 1

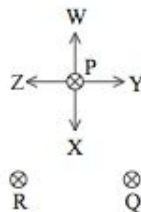
1.

21. A wire is placed in a magnetic field which is directed to the right. The wire carries a current directed into the page. Which of the following is the direction of the force on the wire?



2.

21. Three wires, P, Q and R, carry equal currents directed into the plane of the paper.

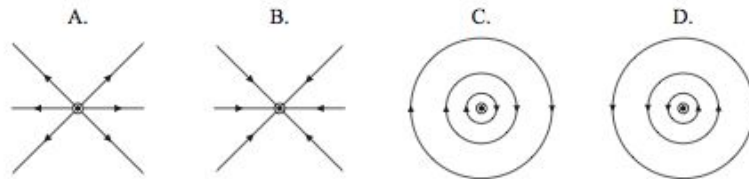


Which arrow correctly identifies the direction of the magnetic force on wire P?

- A. W
- B. X
- C. Y
- D. Z

3.

21. A long straight wire carries an electric current perpendicularly out of the paper. Which of the following represents the magnetic field pattern due to the current?



4.

24. The magnetic field produced by a current in a straight wire is in





- A. the same direction as the current.
- B. the opposite direction to the current.
- C. the same plane as the wire.
- D. any plane perpendicular to the wire.

5.

21. Three parallel wires, X, Y and Z, carry equal currents into the page.

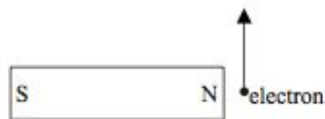


Which arrow represents the direction of the magnetic force on wire Z?

- A. 
- B. 
- C. 
- D. 

6.

21. An electron passes the north pole of a bar magnet as shown below.



What is the direction of the magnetic force on the electron?

- A. Into the page
- B. Out of the page
- C. To the left
- D. To the right

7.

20. Three parallel wires, X, Y and Z, carry equal currents. The currents in X and Z are directed into the page. The current in Y is directed out of the page.

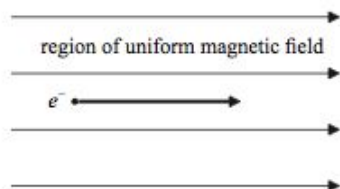


Which arrow shows the direction of the magnetic force experienced by wire Z?

- A.
- B.
- C.
- D.

8.

19. An electron is travelling in a region of uniform magnetic field. At the instant shown, the electron is moving parallel to the field direction.



The magnetic force on the electron is

- A. upwards.
- B. downwards.
- C. to the right.
- D. zero.

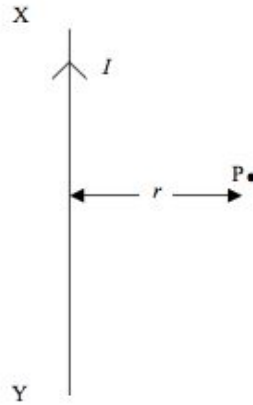
9.

26. A magnetic force acts on an electric charge in a magnetic field when

- A. the charge is not moving.
- B. the charge moves in the direction of the magnetic field.
- C. the charge moves in the opposite direction to the magnetic field.
- D. the charge moves at right angles to the lines of the magnetic field.

10.

27. The diagram shows part of a long, straight vertical wire in which there is a current  $I$ . P is a charged particle at a distance  $r$  from the wire. The magnitude of the charge of P is  $q$ .



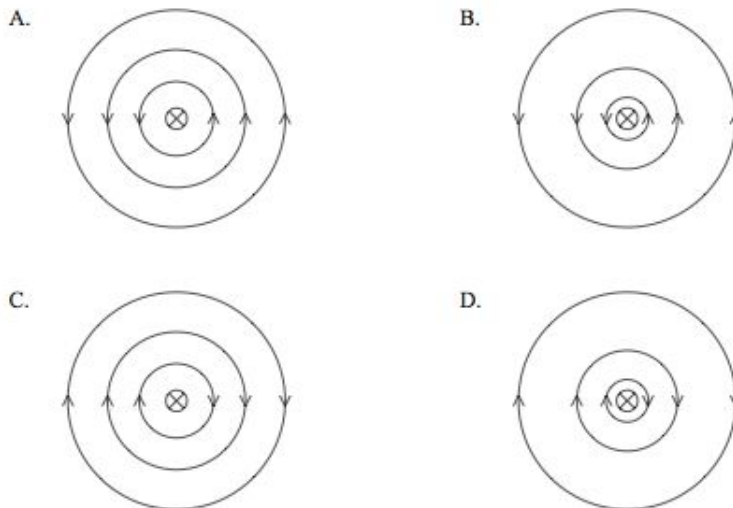
The particle P is moving normally into the plane of the paper with speed  $v$ . The magnitude of the force on P due to the magnetic field of the wire is

- A. zero.
- B.  $\frac{\mu_0 I}{2\pi r} qv$ .
- C.  $\frac{\mu_0 Iq}{2\pi rv}$ .
- D.  $\frac{\mu_0 Iv}{2\pi rq}$ .

11.

26. A long, straight current-carrying wire is placed normal to the plane of the page. The current in the wire is into the plane of the page.

Which of the following diagrams best represents the magnetic field around the wire?



12.