Chapter 26 Practice Test

(#1) The Force is perpendicular to both the velocity and the magnetic field. There is no Force in the direction of B.

[C]

(#2) Magnetism is caused by the movement of charges either by themselves & in currents. Individual magnets based on material is only part of magnetism.

[B]

(#3) If a particle is moving north, the force must be perpendicular. Therefore, a Northeast force is impossible.

[E]

(#4) $F = qvB\times\sin\theta$ $\theta = 90°$

$q = 3.2\times10^{-19}C$

$v = 6.15\times10^{5}\ m/s$

$B = .27\ T$

[B] $F = 5.31\times10^{-14}\ N$

#5 $F = I\ell B \sin\theta = (1.5A)(3m)(1T)\sin 28^\circ$

$= 2.11\ N$

A

#6 $r = \frac{mv}{qB}$ $\quad p = mv$

$p = rqB$ $\quad r = .2\,m$, $q = 3.2\times10^{-19}C$, $B = 1.2\,T$

$p = 7.71\times10^{-20}\ kgm/s$

B

#7 $V = \frac{E}{B}$ $\quad E = VB = (5\times10^{5}\,m/s)(.4\,T)$

$= 2\times10^{5}\ V/m$

The magnetic force would be up by right hand rule so Electric force must be down.

B

#8 Find the period, which is the total time for 1 cycle.

$$T = \frac{2\pi m}{qB} = \frac{2\pi(9.11\times10^{-31}kg)}{(1.6\times10^{-19}C)(1.27\times10^{-3}T)} = 2.82\times10^{-8}s$$

1 Period $= 2\pi$ radians $= 2.82\times10^{-8}s$

? radians $= 5\times10^{-9}s$

set up a ratio and solve for ?

1.11 radians

A

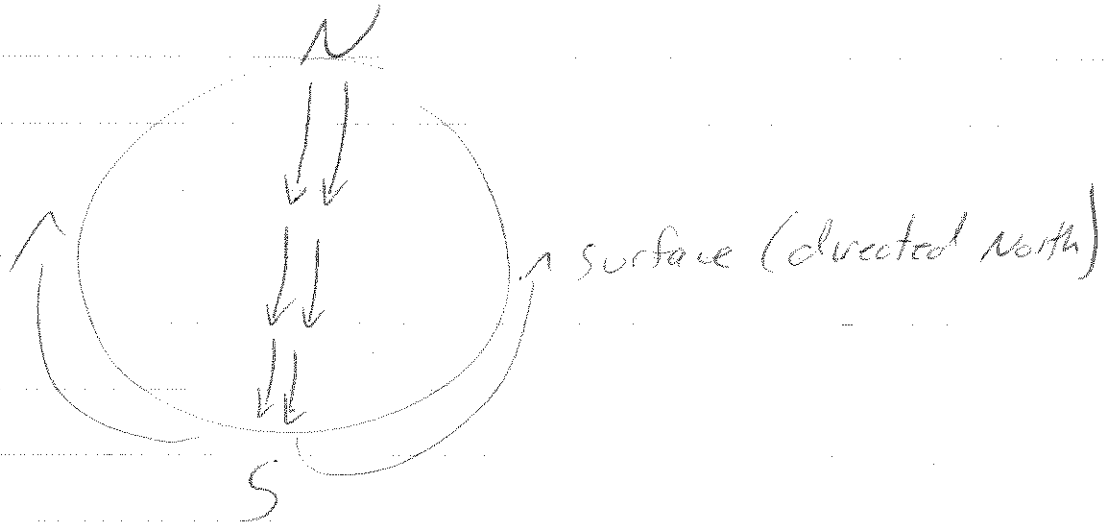
(#9) $r = \frac{mv}{qB} = \frac{(3.3\times10^{-27}kg)(2\times10^{6}m/s)}{(1.6\times10^{-19}C)(.4\,T)} = .103\,m$

[D]

(#10) $r = \frac{mv}{qB} = \frac{(9.11\times10^{-31}kg)(10^{3}m/s)}{(1.6\times10^{-19}C)(5\times10^{-3}T)} = .114\,m$

[B]

(#11) [C] Earth example - South Pole is north pole of magnetic. The field on earths surface is directed towards North geographically. The compass needle points North, the direction of the field lines on the surface.



#12 $1\ T = 1 \times 10^4\ G$ (Definition)

D

#13 Magnetic Fields are continuous. There is ~~not~~ no start or finish.

C

#14 Magnetic Field $\vec{B}$ is out of page. Direct Fingers pointing up on right hand and curl out of page produces a Force to the right.

A

#15 $\vec{B}$ (Magnetic Field) is to the left, Force is out of the page. Using right hand rule for a positive charge, #2 would be the direction of velocity. Since the particle is negative, it is the opposite direction, or #4

D