

1. Definition: A magnetic field is a condition in space which can cause a pair of opposite forces to act on the two _____s of a _____. (120, 121b, 123)
2. Magnetic fields can be produced by _____ or by _____. (120, 124b)
At the center of a current-carrying coil of wire the coil's field is parallel to the coil's _____.
3. How can the magnetic field produced by a short segment of current be predicted? (121b)
4. Describe the magnetic field produced by a long, straight current-carrying wire.
Also state a "hand rule" for predicting the direction of such a field. (122)
5. To make a coil's magnetic field point toward me I must cause electrons to flow in the _____wise direction through the coil. (120, 121)
6. If a magnetic compass is influenced by more than one magnetic field it indicates the direction of the _____ of those fields. (120)
7. Tangent galvanometer principles:
 - a. If an artificial field is _____ to the pre-existing field then the ratio of the _____ field strength to the _____ field strength is equal to the _____ of the deflection angle. (121)
 - b. How does B_c depend on I_c ? _____ (121) -on coil radius? _____ (121b) -on number of turns?
8. Total field map for a current-carrying wire in a uniform magnetic field: (122)
 - a. -wire perpendicular to field:
 - b. -wire parallel to field:
9. Sketch field maps for straight parallel and antiparallel currents. (124b)
10. "Hand rule" for predicting the direction of the magnetic force exerted on a current-carrying wire: (123)
11. How can the strength of that force be predicted? (124) $F = \underline{\hspace{2cm}}$
12. The strength of a magnetic field can be measured with a current balance, using the formula: $\mathbf{B} = \underline{\hspace{1cm}}$.
"B" represents _____, "_____" represents _____, "_____" represents _____, and... (124)
13. Definition: The SI unit for magnetic field strength is the _____, which is defined as the strength of a magnetic field which can _____... (124)
The short version of that definition says "one Tesla = one _____ per _____"
14. The magnetic field produced by a coil of wire depends upon the coil's _____ and its _____.
The equation describing that relation is $B = \underline{\hspace{2cm}}$. For a standard PSSC solenoid the value of the constant in that formula is $K = \underline{\hspace{2cm}}$. (121, 121b, 124, 126)
15. How must the strength of that field depend upon distance from the wire? (Biot & Savart law)
16. How can an electric current ("I") be calculated from the number of particles per meter ("N"), the particle velocity ("v") and the charge of each particle ("q")? (125)
17. How can the magnetic force on a moving charged particle be predicted? $F = \underline{\hspace{2cm}}$
-Define your symbols clearly. (125, 126)
-Show how that formula can be simplified when the velocity is perpendicular to the field: $F = \underline{\hspace{2cm}}$
18. State a "hand rule" for predicting the direction of that force. (125)
19. What kind of trajectory is produced by that force: (125)
 - a. when the velocity is parallel to the field?
 - b. when the velocity is perpendicular to the field?
 - c. when the velocity is oblique?
20. Schuster's path radius formula: (126, 128)
21. How can we calculate the speed of electrons emerging from an electron gun?: (126, 128)