Motor Effect Calculation Questions (F=BIL)

1. A wire carrying a current of 2 A is placed in a magnetic field of strength 0.5 T. The length of wire in the field is 0.3 m. Calculate the force acting on the wire.
2. A loudspeaker contains a wire 0.08 m long in a magnetic field of 0.4 T. The current in the wire is 1.5 A. Calculate the force on the wire.
3. A motor contains a wire carrying 5 A. The wire is 0.12 m long and experiences a force of 0.3 N. Calculate the magnetic flux density.
4. A wire 0.25 m long experiences a force of 1.0 N in a magnetic field of 0.8 T. Calculate the current in the wire.
5. An electric motor contains a wire carrying 3 A in a magnetic field of 0.6 T. The force on the wire is 0.72 N. Calculate the length of wire in the field.
6. A crane uses an electromagnet with a wire carrying 8 A. The wire is 0.5 m long and is placed in a magnetic field of 0.9 T. Calculate the force acting on the wire.
7. A research laboratory is testing a motor. A force of 4.8 N acts on a wire carrying 10 A in a magnetic field of 1.2 T. Calculate the length of wire in the magnetic field.
8. A wire 0.4 m long carrying a current of 15 A experiences a force of 3 N. Calculate the magnetic flux density.
9. A factory robot arm uses a motor where a wire 0.2 m long is in a magnetic field of 1.5 T. The force required is 6 N. Calculate the current needed.
10. An industrial lifting system contains a wire carrying 25 A. The wire is 0.8 m long and is placed in a magnetic field of 1.4 T. Calculate the force acting on the wire.