# Worksheet: Electromagnetic Induction

Uttar Pradesh State Board · Class 12 · Physics · 9 questions · 26 marks

| Name: _____ | Date: _____ | Score: _____ / 26 |
|---|---|---|

**Q1.** A coil of area 0.05 m squared is placed with its plane perpendicular to a field of 0.4 T. Find the flux through it. *[2 marks]*

**Q2.** The flux through a 200-turn coil falls from 0.06 Wb to 0.02 Wb in 0.1 s. Find the average induced emf. *[2 marks]*

**Q3.** A rod of length 0.5 m moves at 4.0 m/s perpendicular to a field of 0.30 T. Find the emf across its ends. *[2 marks]*

**Q4.** A rod of length 0.8 m rotates about one end at 50 rad/s in a field of 0.20 T normal to its plane of rotation. Find the emf between the ends. *[3 marks]*

**Q5.** The current in a coil falls from 4.0 A to 0 in 0.05 s, inducing an average emf of 80 V. Find the self-inductance. *[3 marks]*

**Q6.** Two coils have a mutual inductance of 0.8 H. If the current in the first changes from 2.0 A to 6.0 A in 0.2 s, find the emf induced in the second and the change in flux linkage. *[3 marks]*

**Q7.** A solenoid 40 cm long with 800 turns and area 5.0 x 10^-4 m squared carries 2.0 A. Find its inductance and the energy stored. *[4 marks]*

**Q8.** A coil of 100 turns and area 0.02 m squared rotates at 50 rad/s in a field of 0.5 T. Find the peak emf and state the coil orientation at which it occurs. *[4 marks]*

**Q9.** A bar magnet is moved away from a closed coil with its north pole facing the coil. State the direction of the induced current as seen from the magnet, and justify it by energy conservation. *[3 marks]*