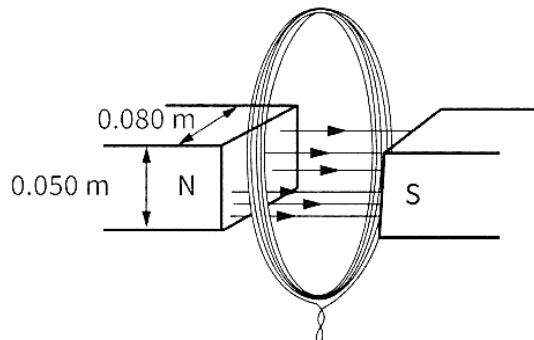


- 26** An electromagnet produces a uniform field from left to right in the gap between its poles. The gap has sides  $0.050\text{ m}$   $\square$   $0.080\text{ m}$  and there is no field outside the gap. A circular coil of radius  $0.100\text{ m}$ , has 40 turns and it surrounds all of the magnetic flux as shown below.



The ends of the coil are connected together so that an induced e.m.f. in the coil produces a current in the coil.

The magnetic flux density of the electromagnet falls linearly from  $0.15\text{ T}$  to zero in a time of  $3.0\text{ s}$ .

What is the average induced e.m.f. in the coil as the magnetic flux density decreases?

- |          |                  |          |                 |
|----------|------------------|----------|-----------------|
| <b>A</b> | $0.20\text{ mV}$ | <b>B</b> | $8.0\text{ mV}$ |
| <b>C</b> | $50\text{ mV}$   | <b>D</b> | $63\text{ mV}$  |