1. A capacitor is discharged. Which row in the table gives correct info
showing the variation of potential difference across the plates with t

	shape of the graph	uantity given by
A	linear decrease	
B	linear decre	
C	expo	
D	exponential decay	

2. Describe one similarity between the law for the force between mass
between charges.

3. Assuming that the only forces acting between two protons are gravi
calculate for two protons that are in contact
(a) the gravitational force between them
(b) the electrostatic force between them
Take the radius of a proton to be 0.85 fm.

4. Calculate the electric field strength at a distance of 10^{-10} m from an

5. A 1000 μF capacitor is charge 0 V with the
switch at position 1 using the circuit to the right.

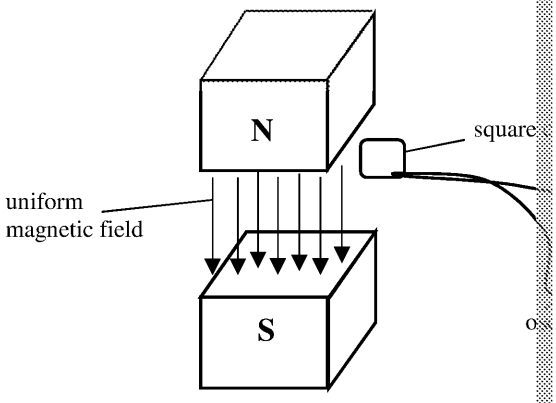
(a) Calculate the charge on the capacitor when it is
charged to 12.0 V. **[2]**
(b) The switch is then moved to position 2.
On graph paper, plot a graph to show the variation
of charge with time for the first 4 s after the switch is
moved to position 2. **[5]**

6. Describe how you would determine the relationship between the ca
dimensions of its plates. You have access to:
- aluminium foil
- a ruler
- paper
- scissors
- a d.c. power supply
- a voltmeter
- a
- and connectors

Inclu what variables you will change, measure and control, and hov

7. An electric drill is being used to make a hole in a wall. The drill us
cutting bit rapidly.
   (a) Under normal use, the current in the motor coil is 3.5 A. The c
   a permanent magnetic field of 6.82 mT. The coil is rectangular
   Calculate the flux linkage when the plane of the coil is at 60° t
   (b) The drill becomes stuck in the wall and the motor stops turning
   the power to the motor switched on. The motor overheats and
   overheats and fails. Use your understanding of electromagnetic

8. The diagram shows a square coil of wire in a uniform magnetic fiel



A student wishes to use this equipment to investigate how the magn
the angle that the plane of the coil makes with the magnetic field.
   (a) Describe how the e.m.f. induced in the coil is measured using t
   (b) Sketch a graph of how you would expect the induced e.m.f. to
   over the range 0–360° when in the same plane as the magn

Preview of Questions Ends Here