

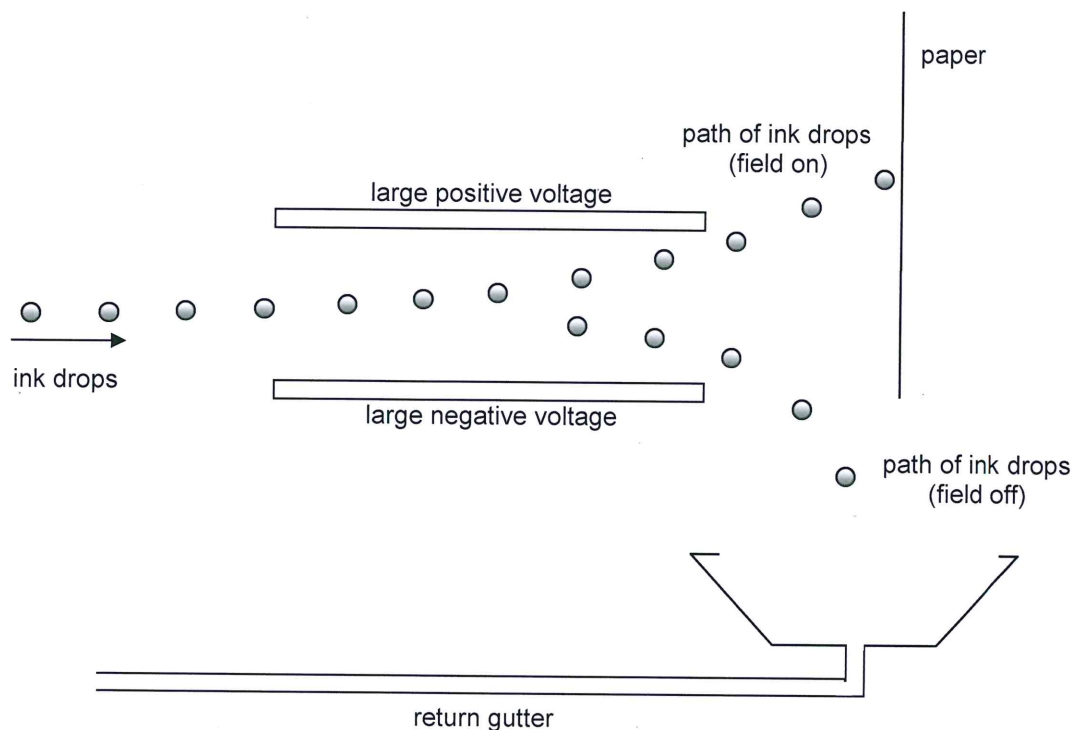
EXAM QUESTIONS

Chapter 3.1 - Electric Fields

Question 1 2010:1:5

(5 marks)

The principle of inkjet printing depends on the physics of charged particles in electric fields. The diagram below shows charged ink drops entering an electric field. The field is caused by high voltage deflection plates. The field on the plates switches on and off to direct drops to the paper rather than the gutter. Drops that do not impact on the page are 'recycled' via the gutter.

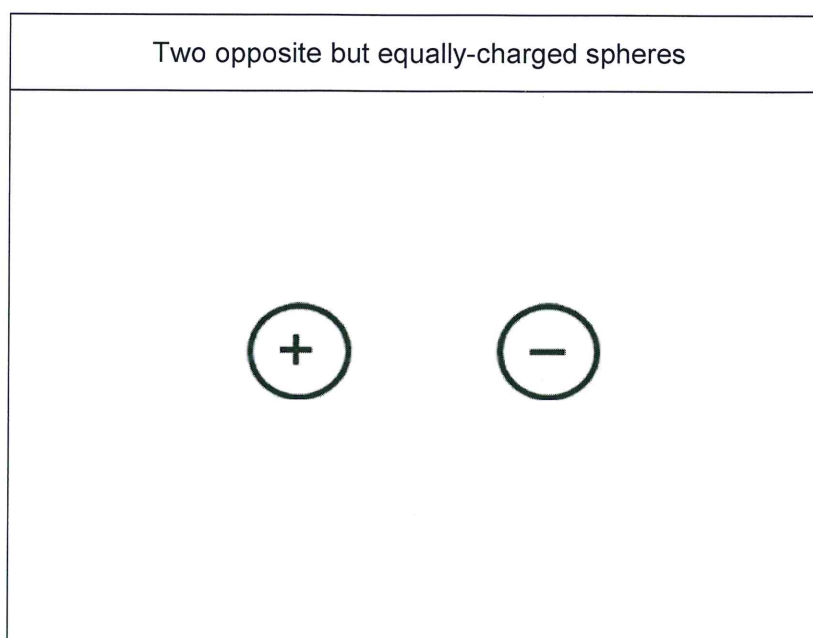


- (a) The plates are separated by 0.025 m and the voltage difference between the plates is 1000 V. Calculate the electric field intensity. (2 marks)
- (b) If the force required to cause a black spot on the paper is 1.00×10^{-8} N, calculate the charge on each drop. (3 marks)

Question 2 2011:1:1

(3 marks)

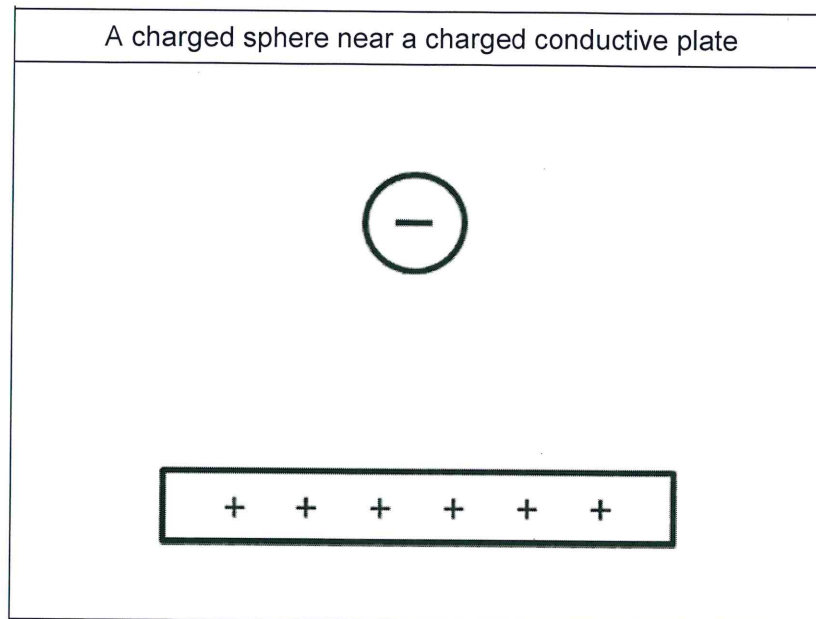
Draw the resultant electric field with at least 5 lines for each of the following situations.



EXAM QUESTIONS

Chapter 3.1 - Electric Fields

Question 2 continued



Question 3 2011:2:15

(10 marks)

An uncharged drop of oil is given 7 excess electrons. It is then introduced into the space between two horizontal plates 25.0 mm apart with a potential difference between them of 1.50 kV. The drop of oil remains stationary.

- (a) Calculate the magnitude of the electric field strength between the plates. (2 marks)
- (b) Is the top plate positive or negative? Explain your reasoning. (2 marks)
- (c) Calculate the magnitude of the electric force acting on the oil drop. (3 marks)
- (d) Calculate the mass of the oil drop. (3 marks)

EXAM QUESTIONS

Chapter 3-1-Electric Fields

Question 4 2014:1:7

(5 marks)

Shown below are three diagrams A, B and C representing fields. Use the diagrams to fill in the blanks in the following sentences. Any field diagram can be used more than once.

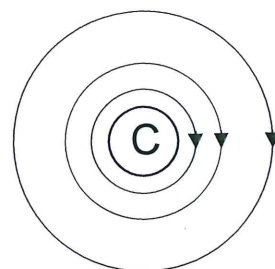
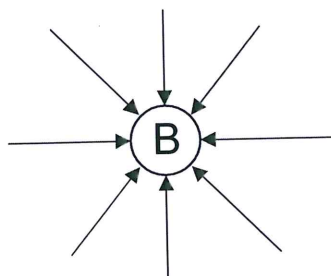
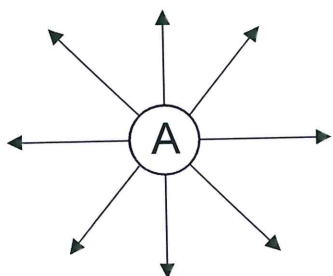


Diagram _____ could represent the gravitational field of a mass.

Diagram _____ could represent the electric field around a positively charged particle.

Diagram _____ could represent the electric field of a negatively charged particle.

Diagram _____ could represent the magnetic field around a wire carrying current that is directed _____ the page.