

Interactive Example Candidate Responses

Paper 4 (May / June 2016), Question 9

Cambridge IGCSE™
Physics 0625



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- 9 (a) (i) State what is meant by the *direction* of an electric field.

The direction of the force which arises from a charged particle. The direction of field lines which arise from a positive charged particle. The direction of force experienced between two charged particles.

- (ii) Fig. 9.1 shows a pair of oppositely-charged horizontal metal plates with the top plate positive.

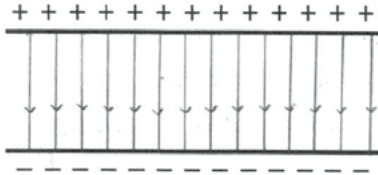


Fig. 9.1

The electric field between the plates in Fig. 9.1 is uniform.

Draw lines on Fig. 9.1 to represent this uniform field. Add arrows to these lines to show the direction of the field. [3]

- (b) Fig. 9.2 shows a very small negatively-charged oil drop in the air between a pair of oppositely charged horizontal metal plates. The oil drop does not move up or down.

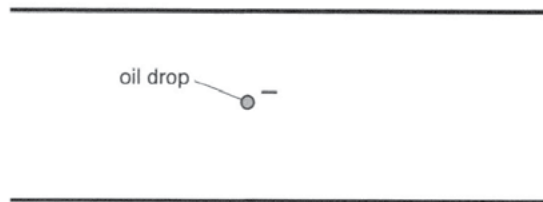


Fig. 9.2

- (i) Suggest, in terms of forces, why the oil drop does not move up or down.

The net force acting on the drop is zero. The resultant force is moment is zero. The force due to gravity is equal to the force created by the electric field.

- (ii) Without losing any of its charge, the oil drop begins to evaporate.

State and explain what happens to the oil drop.

The most energetic molecules escape from the surface of the drop, this cools down the drop and the mass of drop decreases.

[Total: 8]

Your
Mark

9(a)(i)

9(a)(ii)

9(b)(i)

9(b)(ii)

Q9	Mark scheme
(a)(i)	direction of the force on a positive charge
(a)(ii)	Straight parallel lines from upper to lower plate At least 3 lines drawn. All lines drawn equally spaced, approximately symmetrical with respect to plates Arrows downwards
(b)(i)	Upward force (on drop) due to electric field/charge on plates = weight of drop Upward force on drop = downward force on drop OR no resultant/net force on drop OR forces are balanced
(b)(ii)	Drop moves upwards Weight/mass of drop decreases OR downward force decreases OR Upward force (due to electric field) > weight of drop

- 9 (a) (i) State what is meant by the *direction* of an electric field.

The flow of current from positive to negative terminals. [1]

- (ii) Fig. 9.1 shows a pair of oppositely-charged horizontal metal plates with the top plate positive.

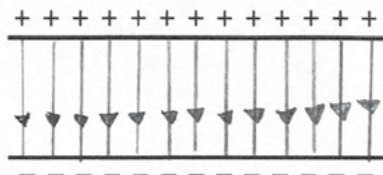


Fig. 9.1

The electric field between the plates in Fig. 9.1 is uniform.

Draw lines on Fig. 9.1 to represent this uniform field. Add arrows to these lines to show the direction of the field. [3]

- (b) Fig. 9.2 shows a very small negatively-charged oil drop in the air between a pair of oppositely charged horizontal metal plates. The oil drop does not move up or down.

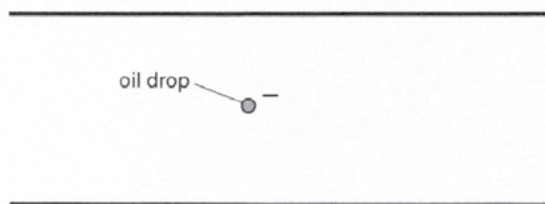


Fig. 9.2

- (i) Suggest, in terms of forces, why the oil drop does not move up or down.

As it is not affected by the forces of the plates. They are not very strong. [2]

- (ii) Without losing any of its charge, the oil drop begins to evaporate.

State and explain what happens to the oil drop.

It moves towards the positively charged plate. [2]

[Total: 8]

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page

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- 9 (a) (i) State what is meant by the *direction* of an electric field.

..... From negative to positive
[1]

- (ii) Fig. 9.1 shows a pair of oppositely-charged horizontal metal plates with the top plate positive.

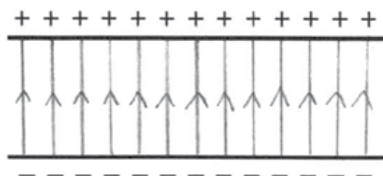


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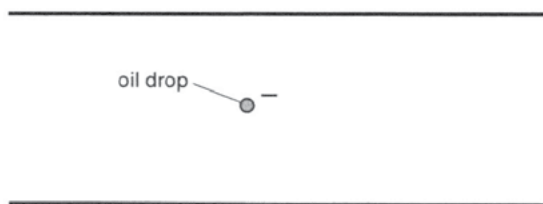


Fig. 9.2

- (i) Suggest, in terms of forces, why the oil drop does not move up or down.

..... Because both the plates are negatively
 charged [2]

- (ii) Without losing any of its charge, the oil drop begins to evaporate.

State and explain what happens to the oil drop.

..... The size of the drop reduces because its
 molecules escape [2]

[Total: 8]

Select
page

Your
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