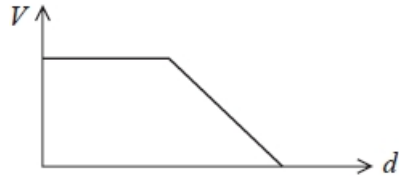
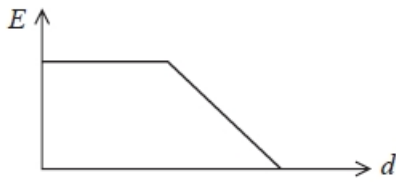
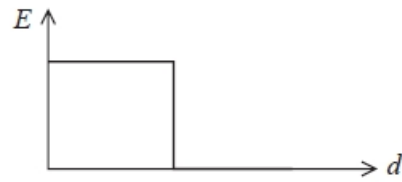
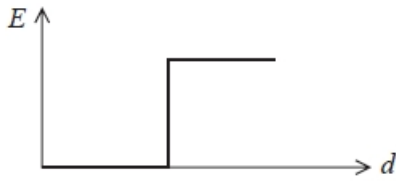
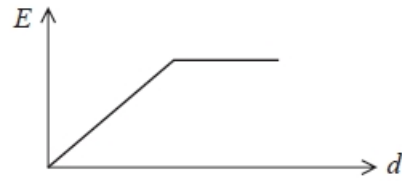


Electric Field (MCQ Only)

Q1.

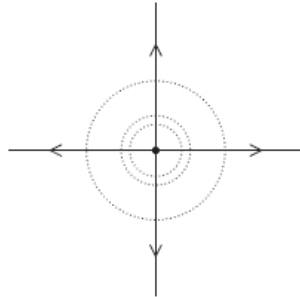
The graph shows how the potential V varies with distance d in an electric field.Which of the following shows the corresponding variation in electric field strength E ? A B C D

(Total for question = 1 mark)

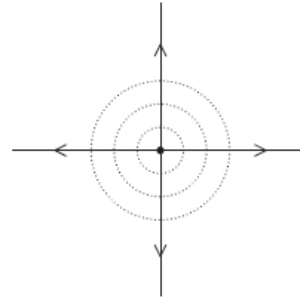
Q2.

A point object has a charge +Q.

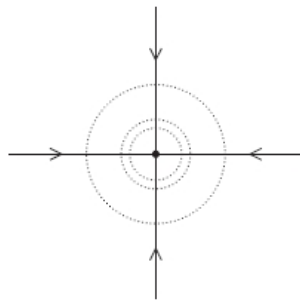
Which of the following diagrams shows equipotential lines differing by a constant potential difference, and electric field lines around the object?



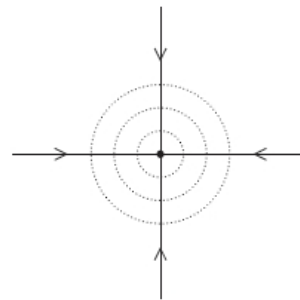
A



B



C



D

(Total for question = 1 mark)

Q3.

What is the acceleration of an electron at a point in an electric field where the electric field strength is $2.0 \times 10^4 \text{ N C}^{-1}$?

- A** $2.8 \times 10^{-16} \text{ m s}^{-2}$
- B** $3.2 \times 10^{-15} \text{ m s}^{-2}$
- C** $1.8 \times 10^{11} \text{ m s}^{-2}$
- D** $3.5 \times 10^{15} \text{ m s}^{-2}$

(Total for question = 1 mark)

Q4.

A potential difference is applied across two parallel plates. A particle carrying a charge of $+0.1\text{ C}$ is placed between the plates and experiences a force F .

The distance between the plates is halved. The potential difference remains constant.

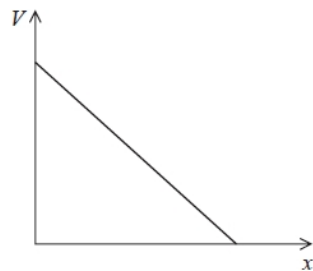
Which of the following is now equal to the electric field strength between the plates?

- A** $5F$
- B** $10F$
- C** $20F$
- D** $40F$

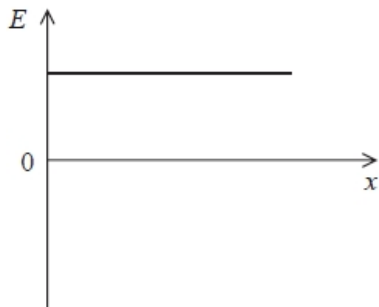
(Total for question = 1 mark)

Q5.

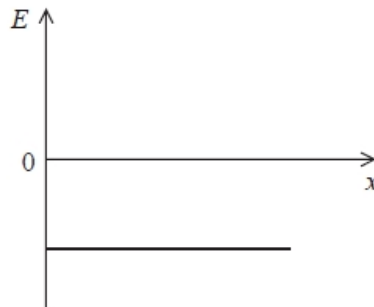
The graph shows how an electric potential V varies with distance x .



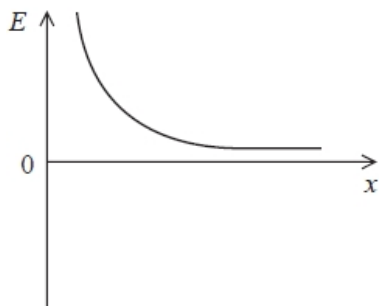
Which of the following shows the corresponding variation of electric field strength E with x ?



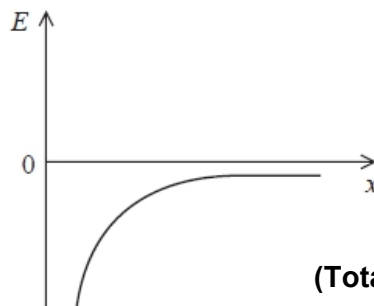
A



B



C

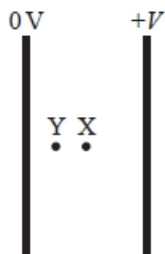


D

(Total for question = 1 mark)

Q6.

A potential difference V is applied across two parallel plates. An electron midway between the two plates at point X experiences an electric force F .



The electron moves to point Y which is halfway between point X and the left-hand plate.

Which of the following is the electric force experienced by the electron at Y?

- A $2F$
- B F
- C $\frac{F}{2}$
- D $\frac{F}{4}$

(Total for question = 1 mark)

Q7.

The distance between a proton and an electron is r . The electrostatic force is F .

The distance between the proton and electron is doubled.

Which of the following is equal to the electrostatic force at this separation?

- A $2F$
- B $\frac{F}{2}$
- C $\frac{F}{3}$
- D $\frac{F}{4}$

(Total for question = 1 mark)

Q8.

The force between two identical point charges, X and Y, is F .

Charge X is doubled; charge Y remains the same.

Which row of the table gives the force on each charge?

	X	Y
<input type="checkbox"/> A	F	F
<input type="checkbox"/> B	F	$2F$
<input type="checkbox"/> C	$2F$	F
<input type="checkbox"/> D	$2F$	$2F$

(Total for question = 1 mark)

Mark Scheme - Electric Fields (MCQ Only)

Q1.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is C		1
	<i>A is not correct because the E is equal to – gradient of the graph of V against r B is not correct because the E is equal to – gradient of the graph of V against r D is not correct because the E is equal to – gradient of the graph of V against r</i>		

Q2.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is A		1
	<i>B is not correct because field direction is correct but equipotential lines will become further apart as distance increases as $V \propto 1/r$ C is not correct because field direction is incorrect D is not correct because field direction is incorrect</i>		


Q3.

Question Number	Answer	Mark
	D	1

Q4.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is C A is not correct as $E_{\text{initial}} = F/Q = 10F$, if d halved then $E_{\text{after}} = 20F$ B is not correct as $E_{\text{initial}} = F/Q = 10F$, if d halved then $E_{\text{after}} = 20F$ D is not correct as $E_{\text{initial}} = F/Q = 10F$, if d halved then $E_{\text{after}} = 20F$		1

Q5.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is A</p> 	B,C and D are not the negative potential gradient	1

Q6.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is B</p> <p><i>A is not correct because this is a uniform field so F constant</i></p> <p><i>C is not correct because this is a uniform field so F constant</i></p> <p><i>D is not correct because this is a uniform field so F constant</i></p>	F	1

Q7.

Question Number	Acceptable answers	Additional guidance	Mark
	<p>The only correct answer is D</p> $\frac{F}{4}$	A,B and C do not show an inverse square	1

Q8.

Question Number	Acceptable answers	Additional guidance	Mark
	D		1