The gravitational constant, G, is a constant of proportionality in Newton's law of gravitation. The permittivity of free space, ε_0 , is a constant of proportionality in Coulomb's law.

1

When comparing the electrostatic force acting on a pair of charged particles to the gravitational force between them, the product $\varepsilon_0 G$ can appear in the calculation.

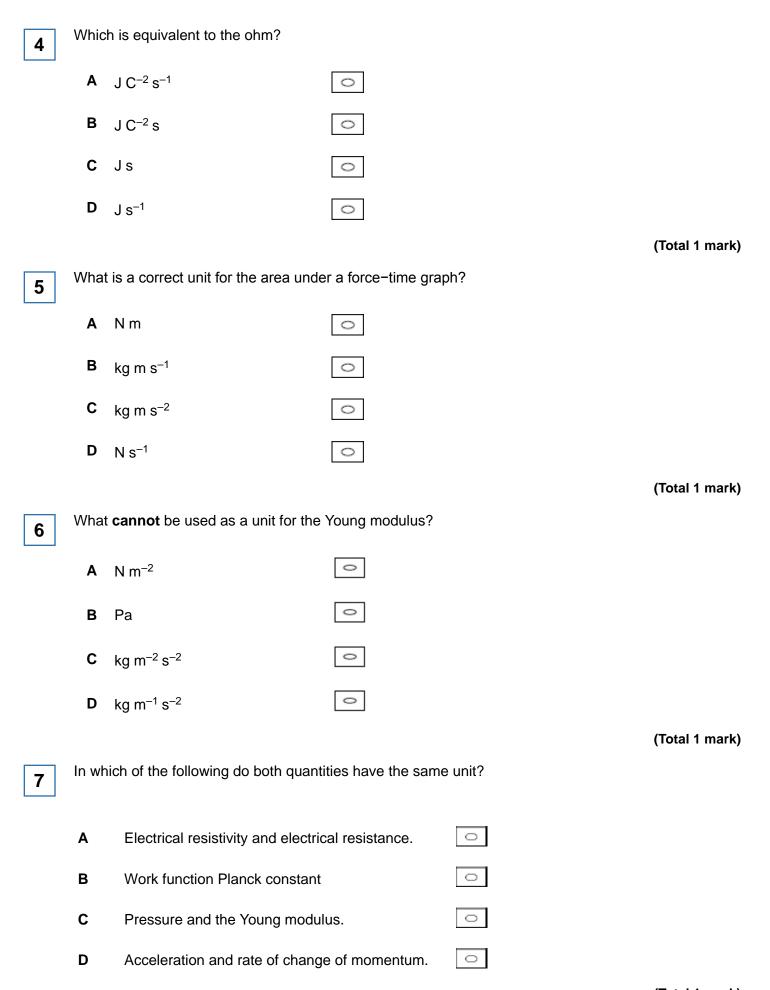
	Whie	ch is a unit for $arepsilon_0 G?$	G=N	m ² kg ⁻²	E_= 1		-L	
		A $C^{2} kg^{-2}$ B $C^{2} m^{-2}$ C $F kg^{2} N^{-1} m$ D it has no un	1-2 rem 01	Nm Rg eF: C: >F: C		C"SNM WD=Fx Sub-in		Vm N~m ⁻¹
2	Whi	ch of the following g	ives a correct	unit for $\left(\frac{g^2}{G}\right)$?	,	$(^2 N^{-1} m^{-1})$ => $(^2 V^{-1} m^{-1})$	Nmkg Rail (P	otal 1 mark)
	Α	Ν	<u> </u>	EM		2- 1-	.E2	E ² × Mm
	В	N kg ⁻¹	• F=	GMm =>	G-E	É ⇒ Mm	m2 7	Mª Fr
	С	N m	0	۲٢		-	Fr	now in
	D	N m ⁻²	0	SN	× Kg	z = N	Lala	White
3	Whi	ch of the following is	s not a unit of	power?	por	M		otal 1 mark)
	Α	N m s ^{−1}	0					
	В	kg m² s⁻³	0					
	С	J s ^{−1}	0					

(Total 1 mark)

kg m⁻¹ s⁻¹

D

 \circ



A mobile phone operates at a constant power of 200 mW
It has a 3.7 V lithium-ion battery that has a charge capacity of 9400 C

What is the time taken for the battery to discharge completely?

Α	2 hours	$^{\circ}$
В	48 hours	0
С	120 hours	\circ
D	140 hours	0

8

(Total 1 mark)

Mark schemes

