

Name of the Student: \_\_\_\_\_

Max. Marks : 11 Marks

Time : 11 Minutes

Mark Schemes

Q1.

Question Number	Answer	Mark
	The only correct answer is B because $mg = GMm/r^2$ so acceleration of free fall is proportional to mass / diameter <sup>2</sup> = $g(M/9)/(D/2)^2 = \frac{9.81 \times 4}{9}$	1

Q2.

Question Number	Acceptable answer	Additional guidance	Mark
	D	The only correct answer is D: potential is proportional to $1/x$ A is not correct because electric fields do not cause a force on uncharged particles B is not correct because the force caused by gravitational field has only ever been shown to be attractive C is not correct because field strength is inversely proportional to $x^2$	1

Q3.

Question Number	Acceptable answer	Additional guidance	Mark
	B	The only correct answer is B because the electric field is always positive except at infinity, when it is zero A is not the correct choice because the statement is correct C is not the correct choice because the statement is correct D is not the correct choice because the statement is correct	1

Q4.

Question Number	Answer	Mark
	The only correct answer is D <i>A is not correct because gravitational field strength is proportional to <math>1/r^2</math></i> <i>B is not correct because electric field strength is proportional to <math>1/r^2</math></i> <i>C is not correct because gravitational potential is always negative</i>	1

Q5.

Question Number	Answer	Mark
	B	1

Q6.

Question Number	Answer	Mark
	A	1

Q7.

Question Number	Answer	Mark
	<b>D Both fields act on all particles.</b>	1
	Incorrect Answers: A – this is a similarity B – this is a similarity C – this is a similarity	

Q8.

Question Number	Answer	Mark
	B	1

Q9.

Question Number	Acceptable answers	Additional guidance	Mark
	D		1

Q10.

Question Number	Answer	Mark
	C	1

Q11.

Question Number	Answer	Mark
	<p>The only correct answer is B</p> <p><i>A is not correct because gravitational force is equal to centripetal force, so the velocity is independent of the mass of the satellite</i></p> <p><i>C is not correct because gravitational force is equal to centripetal force, so the velocity is independent of the mass of the satellite</i></p> <p><i>D is not correct because gravitational force is equal to centripetal force, so the velocity is independent of the mass of the satellite</i></p>	1