Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic : 2 (Mechanics)

Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

Question number	Acceptable answers	Additional guidance	Mark
	A		1

Q2.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is C A *is not correct because acceleration is 0* as *v* constant B *is not correct because there is a resistive force opposing weight* D *is not correct because there is a weight*	There is a resultant force acting on the object.	1

Q3.

Question Number	Answer	Mark
	A $\frac{6^2}{2 \times 9.81}$ Incorrect Answers: B – this answer is incorrect C – this answer is incorrect D – this answer is incorrect	1

Q4.

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Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is D A is not the correct answer, as efficiency = useful output/input = 40/44 B is not the correct answer, as efficiency = useful output/input = 40/44 C is not the correct answer, as efficiency = useful output/input = 40/44		**1**

Q5.

Question Number	Answer	Mark
	D $\frac{mgh}{VIt}$ Incorrect Answers: A – this answer is incorrect B – this answer is incorrect C – this answer is incorrect	**1**

Q6.

Question Number	Answer	Mark
	B - mgy, $E_P = mg\Delta h$, correct distance (vertical)	**1**
	Incorrect Answers: **A** – incorrect distance (horizontal) **C** – incorrect distance (horizontal + vertical) **D** – incorrect distance (length of slope)	

Q7.

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Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is B A is not the correct answer, as this is a correct equation of motion in the vertical plane. C is not the correct answer, as this is a correct equation of motion in the vertical plane. D is not the correct answer, as this is a correct equation of motion in the vertical plane. .		1

Q8.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is D A is not the correct answer, as $mg - R = ma$ B is not the correct answer, as $mg - R = ma$ C is not the correct answer, as $mg - R = ma$		1

Q9.

Question Number	Answer	Mark
	The only correct answer is B P and Q have the same magnitude of momentum. **A** *is not correct because Q moves faster than P as it has a smaller mass and they have the same magnitude of momentum.* **C** *is not correct because Q moves faster than P as it has a smaller mass and they have the same magnitude of momentum.* **D** *is not correct because Q moves faster than P as it has a smaller mass and they have the same magnitude of momentum.*	1

Q0.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is D A is not correct as there must be a resultant force downwards B is not correct as there must be a resultant force downwards C is not correct as there must be a resultant force downwards		1

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Q11.

Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is B *A is not correct because this is not dimensionally correct* *C is not correct because* $E_k/_{2p} = v/_4$ *D is not correct because this is not dimensionally correct*		**1**

Q12.

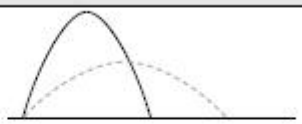
Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is B A is not the correct answer, as it equals (power of motor×time) −g.p.e. C is not the correct answer, as it equals (power of motor×time) −g.p.e. D is not the correct answer, as it equals (power of motor×time) −g.p.e.		**1**

Q13.

Question Number	Acceptable answers	Additional guidance	Mark
	B as equal to total momentum before = 1×2−0.5×2	1.0	**1**
	A is the answer if each trolley had the same momentum C is the momentum of the second trolley only D is the answer if the two trolleys were travelling in the same direction		

Q14.

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Question Number	Answer	Mark
	B 	1
	Incorrect Answers: A – this is the trajectory for a ball kicked at an angle greater than θ, at a greater speed C – this is the trajectory for a ball kicked at an angle greater than θ, at a greater speed D – this is the trajectory for a ball kicked at an angle lower than θ, at a lower speed	

Q15.

Question Number	Answer	Mark
	D	1

Q16.

Question Number	Answer	Mark
	The only correct answer is C $\sqrt{(2 \times 9.81 \times 0.83) + 1.72^2}$ **from combining the vertical velocity (from** $v^2 = u^2 + 2as$**) and horizontal velocity of the ball** **A** *is not correct because the first part of the expression represents the (vertical velocity)^2 and so should not be squared.* **B** *is not correct because the first part of the expression represents the (vertical velocity)^2 and so should not be squared.* **D** *is not correct because this should be square rooted, as Pythagoras theorem is being used.*	1

Q17.

Question Number	Answer	Mark
	A	1

Q18.

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Question Number	Acceptable answers	Additional guidance	Mark
	The only correct answer is A B is not the correct answer, as force on sphere is repulsion. C is not the correct answer, as tension in thread direction is incorrect. D is not the correct answer, as force on sphere is repulsion and tension direction is incorrect.		**1**

Q19.

Question Number	Answer	Mark
	A	1

Q20.

Question Number	Answer	Mark
	B	1

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