Name of the Student:_____

Max. Marks : 20 Marks   **Time : 20 Minutes**

Mark Schemes

Q1.

Question Number	Answer	Mark
(i)	The only correct answer is C **20 m/s** A is not correct because 0.2 m/s is too slow B is not correct because 2 m/s is too slow D is not correct because 200 m/s is too fast	(1)

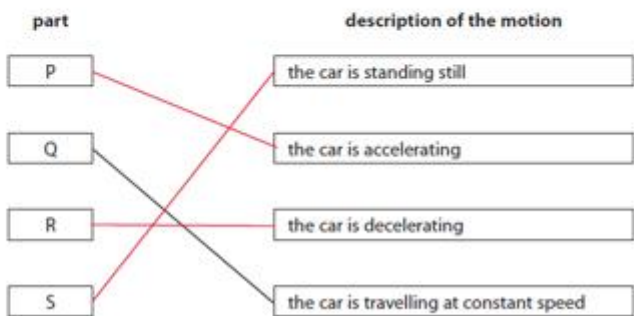| Question Number	Answer	Additional guidance	Mark
(ii)	recall (1) (ΔGPE) = m × g × Δh substitution (1) (ΔGPE =) 75 x 10 x 20 evaluation (1) 15 000 (J)	NO PoT error NO ecf from wrong equation mgh or m x g x h 75 x 10 x 20 scores the first 2 marks accept 14700 (J) from using g = 9.8 (N/kg) award full marks for the correct answer without working	(3)

Q2.

Question Number	Answer	Additional guidance	Mark
	B distance **A,C**, and **D** are incorrect as these are vector quantities		(1) AO1

Q3.

Question number	Answer	Mark
	☒ **B** force Options A, C and D are all scalars.	**(1)**

Q4.

Question number	Answer	Mark
	C mass	(1)

Q5.

Question Number	Answer	Mark
(i)	all three correct (2) one or two correct (1) part description of the motion P the car is standing still Q the car is accelerating R the car is decelerating S the car is travelling at constant speed	(2)

Question Number	Answer	Additional guidance	Mark
(ii)	Q and S Q (1) (and) S (1) OR S (1) (and) Q (1)	in either order maximum of 1 mark if 3 letters given no marks if 4 or more letters given	(2)

Question Number	Answer	Additional guidance	Mark
(iii)	substitution (1) (distance =) 30 x 100 evaluation (1) 3000 (m)	for 1st mp accept 100 x 30 OR (30 x 50) x 2 award full marks for the correct answer without working allow **1 mark** for EITHER 30 x 50 OR 30 x 150 OR 30 x 250	**(2)**

Q6.

	Answer	Acceptable answers	Mark
(a)(i)	A the focal length (1)		**(1)**
(a)(ii)	smaller than (1) real (1)		**(2)**
(b)	• Any (more or less) straight ray which changes direction inside the lens (1)	Ray does not need to touch far side. Allow slight discontinuities Ignore any ray drawn beyond the 2nd surface and any reflected ray(s). Ignore any extra incident rays.	**(1)**
(c)	substitution into given equation (1) 1.3 × 300 000 evaluation (1) 390 000 (km)	Power of 10 error max 1 mark 3.9 × 10^5 (km) 2 marks for correct numerical answer with no working shown Ignore any unit given by candidate.	**(2)**
(d)	D energy and information (1)		**(1)**

Total for Question = 7 marks