Question number	Answer	Notes	Marks
7 (a)	momentum = mass x velocity OR 72 x 8 ; Calculation 580 (kg m/s);	Or equivalent rearrangement ACCEPT use of standard abbreviations i.e. p = mv ALLOW 576 (kg m/s)	2
(b)	Substitution 920 ÷ 0.17 ; Calculation 5400 (N) ;	REJECT Alternative incorrect unit for 1 mark ACCEPT 5410 / 5412 / 5411.7…… 5411.8 REJECT 5411	2
(c) (i)	Any **two** from: <u>Road</u> Weather-related e.g. wet / dry / rainy / icy ; Surface-related e.g. gravel / mud / freshly tarmaced / oily ; Gradient e.g. uphill / downhill ; <u>Car</u> Mechanical e.g. quality of tyres / brakes ; Momentum-related e.g. speed / number of passengers / mass ; <u>Driver</u> State of alertness e.g. tired / alcohol / drugs / mobile phone / other distractions ; Reaction time ;	 ALLOW slippery if qualified	2

Question number	Answer	Notes	Marks
8	Any **six** from: <u>Single fission described</u> Neutrons captured / absorbed / metastable / unstable state ; Causes break-up of nucleus / daughter nuclei ; Releasing energy ; Releasing neutrons ; <u>Further fissions described</u> (Spare) neutrons can cause further fissions ; In a chain reaction ; <u>Control described</u> Moderator to slow down neutrons / increases rate ; Control rod 'mops up' / absorbs neutrons / reduces rate ; Control rods can be inserted / removed ; <u>Energy harvesting described</u> (Energy released) used to heat water ; A heat transfer mechanism mentioned ;	REJECT (for 1 mark) Confusion of electrons and neutrons REJECT (for 1 mark) Fission of <u>atoms</u> / <u>molecules</u> / <u>cells</u> ACCEPT points shown in a clear and labelled diagram	6

Total 6 marks

PAPER TOTAL: 60 MARKS