

	Mark	Commentary
Q5	3	1 – limited 2 – reasonable 3 – good
Response 1	3	The candidate has given an account of the nature of alpha and beta particles, typical absorbers and has shown some knowledge of relative penetration. The third paragraph about uses does not add to the answer. A good understanding, however, is shown.
Response 2	1	The scope of the candidate's response is limited, with statements about the wave nature of gamma. The statement about gamma being stopped by thick lead is not strictly true, and although gamma radiation will travel faster through air than beta, beta would not be classified as the 'slowest'. There is a basic awareness of the properties of the radiations, but only a limited understanding.
Response 3	0	The candidate's comments do not show even a limited understanding of nuclear radiation.
Response 4	0	The candidate's comments do not show even a limited understanding of nuclear radiation.
Response 5	2	The candidate has commented on the nature and relative effects of alpha and gamma in terms of biological harm, and has correctly commented on typical absorbers for the same radiations. The candidate has identified gamma as a member of the EM spectrum and overall has demonstrated a reasonable understanding.
Response 6	2	The candidate has explained the nature, and relative penetration of alpha, beta and gamma in terms of typical absorbers. The use of the phrase ' <i>Gamma radiation is the most powerful</i> ' is not ideal and they have made incorrect statements about the nature of beta radiation. The candidate is showing a reasonable understanding of the physics.
Response 7	2	The candidate has explained the nature, and relative penetration of alpha, beta and gamma in terms of typical absorbers. The sentence comparing energies is ambiguous. Overall, the candidate has demonstrated a reasonable understanding of the physics.
Response 8	3	The candidate has given an account of the nature of alpha and beta particles, typical absorbers and has shown some knowledge of relative penetration. A good understanding of the physics is shown.

	Mark	Commentary
Q10	3	1 – limited 2 – reasonable 3 – good
Response 1	0	The candidate's response does not demonstrate even a limited understanding of the physics.
Response 2	1	This is a fairly narrow response, commenting on manoeuvrability and frictional effects, demonstrating a limited understanding of the physics.
Response 3	3	The candidate has made a number of points, highlighting advantages of raised or lowered wheels in a number of situations. The candidate's response is not 'perfect' or even 'excellent', but overall, it was felt that the understanding demonstrated was better than 'reasonable'.
Response 4	1	The candidate has answered in terms of increased and decreased friction, showing an understanding of the physics which was felt to be closer to 'limited' than 'reasonable'.
Response 5	2	Again, the candidate has answered in terms of increased and decreased friction, but has linked this to a number of different road conditions and to fuel saving, demonstrating a reasonable understanding of the physics.
Response 6	0	The candidate has attempted to answer in terms of Newton's second and third laws, but, in doing so has not demonstrated even a limited understanding of the physics.
Response 7	3	The candidate has given a full answer, highlighting advantages of raised or lowered wheels in a number of situations, and in doing so has demonstrated a good understanding of the physics.
Response 8	2	The candidate has answered in terms of both friction and pressure, but has not developed either point, and so has demonstrated a reasonable, rather than a good understanding of the physics.