Mark Scheme (Results)

Summer 2023

Pearson Edexcel International GCSE
In Physics (4PH1) Paper 2PR

Question number	Answer	Notes	Marks
1 (a)		ignore line drawn from force as already given 3 marks if all correct 2 marks if 2 correct 1 mark for any 1 correct ignore line if more than one physical quantity or unit are linked to each other	3
(b) (i)	idea that vectors have a direction but scalars do not;	allow idea that only vectors have a direction	1
(ii)	any correct scalar;	e.g. speed, distance, length, mass, time, temperature, energy, power etc.	1

Total for Question 1 = 5 marks

Question number	Answer	Notes	Marks
2 (a)	chemical (energy store);		1
(b)	any one advantage of natural gas from: MP1. idea that electricity generated can change to meet demand; MP2. idea that it is reliable; any one disadvantage of natural gas from: MP3. non-renewable / gas will eventually run out; MP4. burning gas produces CO_2 / greenhouse gases; MP5. dependency on other countries to supply gas; any one advantage of wave power from: MP6. idea that it is renewable; MP7. produces no polluting gases; any one disadvantage of wave power from: MP8. idea that waves might not always be present; MP9. (may) cause harm to wildlife; MP10. possible storm damage to the generator;	ignore references to cost allow idea that startup time is (very) short e.g. is always available, does not depend on weather allow causes air pollution, contributes to global warming ignore references to visual pollution allow waves are weather dependent	4

Total for Question 2 = 5 marks

Question number		Answer	Notes	Marks
7	(a)	C and D ticked with A and F unticked = 1 mark; all of B, C, D and E ticked with A and F unticked = 2 marks;; 	if either A or F ticked then award 0 marks	2

Sound wave	Frequency in Hz	Can be heard by humans
A	10	
B	30	✓
C	500	✓
D	2000	✓
E	10 000	✓
F	25 000	

Question number		Answer	Notes	Marks
	(b)	wave drawn with lower amplitude throughout; wave drawn with lower frequency throughout;	ignore vertical position of wave in the grid peak to peak should be less than 4 squares vertically throughout trace should be less than 2½ waves in the trace	2
	(c) (i)	conversion of temperature into kelvin; substitution and evaluation; e.g. temperature = 46 + 273 = 319 K speed = (0.606 × 319) + 166 = 360 (m/s)	allow 319 seen anywhere in working apply ecf if 46 used as kelvin temperature giving 194, 193.9, 193.876 (m/s) for 1 mark **allow 359, 359.3… (m/s)**	2
	(ii)	substitution into speed = frequency × wavelength; rearrangement; evaluation; e.g. 360 = 15 000 × wavelength wavelength = 360 / 15 000 (wavelength =) 0.024 (m)	allow ecf from (i) use of 194 (m/s) from (i) gives an answer of 0.013 (m) answer of 0.023 gets 2 marks only **allow 0.02, 0.0239… (m)**	3

Total for Question 7 = 9 marks