

IGCSE Physics 4437 / 3F

Final Mark Scheme

November 2007

IGCSE

IGCSE Physics (4437/3F)

Question Number	Question		
1	(a)		
	Acceptable Answers	Reject	Mark
	red (1) violet (1) Notes (red) at the top at the bottom accept 'purple' or 'mauve'		(2)

Question Number	Question		
1	(b)		
	Acceptable Answers	Reject	Mark
	(i) decreases (1) (ii) increases (1) (iii) stays the same (1) Notes allow any clear indication		(3)

Total 5 marks

Question Number	Question		
2	(a)		
	Acceptable Answers	Reject	Mark
	any two of <ul style="list-style-type: none"> • (electric) fire • (electric) toaster • soldering iron • hair drier • etc. Notes accept any example which is clear and correct	(electric) heater lamp TV	(2)

Question Number	Question		
2	(b)		
	Acceptable Answers	Reject	Mark
	any two of <ul style="list-style-type: none"> earthing/earth wire/green and yellow wire insulation double insulation circuit breakers 	'fuses'	(2)

Question Number	Question		
2	(c)		
	Acceptable Answers	Reject	Mark
	any two of <ul style="list-style-type: none"> (electric) shock (electric) burn water is a conductor electricity passes through you to earth 		(2)

Question Number	Question		
2	(d)		
	Acceptable Answers	Reject	Mark
	any two of <ul style="list-style-type: none"> (electric) shock (electric) burn metal/screwdriver is a conductor electricity passes through you to earth <p>Notes credit should be given even if the same point(s) has/have been credited in part (c)</p>		(2)

Total 8 marks

Question Number	Question		
3	(a)		
	Acceptable Answers	Reject	Mark
	heat (1) sound (1) Notes either order accept 'noise' or 'vibration'		(2)

Question Number	Question		
3	(b)		
	Acceptable Answers	Reject	Mark
	useful Notes accept if meaning clear e.g. 'functional'		(1)

Question Number	Question		
3	(c)		
	Acceptable Answers	Reject	Mark
	(i) chemical (energy) (1) (ii) nuclear/atomic (energy) (1) Notes (ii) accept 'fission' (energy)		(2)

Question Number	Question		
3	(d)		
	Acceptable Answers	Reject	Mark
	(i) bow (and arrow) / cross bow / catapult / (stretched/wound up) spring / etc (1) (ii) water behind a dam / counterweight / drop hammer / pile driver / etc (1) Notes (i) & (ii) accept any clear and correct response		(2)

Total 7 marks

Question Number	Question		
4	(a)		
	Acceptable Answers	Reject	Mark
	(i) $3\frac{1}{2}$ / 3.50 / 3.5 / 3.30 hours (1) Notes allow '210 minutes' if correct unit given		
	(ii) half an hour / $\frac{1}{2}$ / 0.5 / 0.50 (hour) (1) Notes allow '30 minutes' if correct unit given		
	(iii) 45 (kilometres) (1)		
	(iv) graph/line/slope (1) steeper/greater (1)		
			(5)

Question Number	Question		
4	(b)		
	Acceptable Answers	Reject	Mark
	(i) (average) speed = distance (moved) \div time (taken) (1) Notes or any correctly transposed version		
	(ii) metres per second (1) Notes or m/s	'mps'	
			(2)

Total 7 marks

Question Number	Question		
5	(a)		
	Acceptable Answers	Reject	Mark
	(i) equally in all directions (1) (ii) equally in all directions (1) Notes (i) & (ii) allow any clear indication		(2)

Question Number	Question		
5	(b)		
	Acceptable Answers	Reject	Mark
	pressure = force ÷ area Notes or any correctly transposed version		(1)

Question Number	Question		
5	(c)		
	Acceptable Answers	Reject	Mark
	square metre / metre square / accept any measure of area (1) m ² (1) pascal / any measure of pressure (1) Pa (1)		(4)

Question Number	Question		
5	(d)		
	Acceptable Answers	Reject	Mark
	<p><u>area</u> in contact with/ touching the floor is less (1) (same) <u>force</u> acts on this area (1)</p> <p>or <u>force</u> remains the same or <u>force</u> due to weight (of student and chair)</p> <p>(so) <u>pressure</u> (on floor) increase (1)</p> <p>or <u>force</u> acting on each leg increases from $w \div 4$ to $w \div 2$ (and) <u>area</u> in contact with the floor is less (so) <u>pressure</u> (on the floor) increases</p> <p>Notes underlined word must be used correctly in the correct context to gain credit</p>		(3)

Total 10 marks

Question Number	Question		
6	(a)		
	Acceptable Answers	Reject	Mark
	<p>(i) time (1)</p> <p>(ii) isotopes (1)</p>		(2)

Question Number	Question		
6	(b)		
	Acceptable Answers	Reject	Mark
	<p>(i) 50 (years) (1)</p> <p>(ii) October 2057 (1) ecf from (i)</p> <p>Notes both month and year required</p> <p>(iii) Bq (1)</p> <p>Notes must be correct in every detail</p>		(3)

Question Number	Question		
6	(c)		
	Acceptable Answers	Reject	Mark
	tracers (1) specimens (1) radiotherapy (1) allow 'tracers' if not previously offered Notes must be in correct order		(3)

Total 8 marks

Question Number	Question		
7	(a)		
	Acceptable Answers	Reject	Mark
	(directly) proportional Notes		(1)

Question Number	Question		
7	(b)		
	Acceptable Answers	Reject	Mark
	(i) tension /weight / gravitational force (1) (ii) 2.5 (N) (1) (iii) 4.0 - 5.0 (1)		(3)

Question Number	Question		
7	(c)		
	Acceptable Answers	Reject	Mark
	(i) A (1) (ii) B (1) (iii) large extension for small increase in force (1)		(3)

Total 7 marks

Question Number	Question		
8	(a)		
	Acceptable Answers	Reject	Mark
	(i) decreases (1) (ii) increases (1) Notes (ii) e.c.f		(2)

Question Number	Question		
8	(b)		
	Acceptable Answers	Reject	Mark
	(i) $V = I \times R$ (1) (ii) Increases (1) not dop no ecf (iii) R (almost) same (1) I bigger (1) Notes (iii) potential divider idea can score 2		(4)

Question Number	Question		
8	(c)		
	Acceptable Answers	Reject	Mark
	voltmeter connected in parallel across buzzer or R		(1)

Total 7 marks

Question Number	Question		
9	(a)		
	Acceptable Answers	Reject	Mark
	(i) number of cycles (or waves) in unit time (1) (ii) time for one cycle (period) (1) Notes		(2)

Question Number	Question		
9	(b)		
	Acceptable Answers	Reject	Mark
	(i) $72 / 60 = 1.2$ (Hz) (1) (ii) $1 / 1.2 = 0.833$ (s) (1)		(2)

Question Number	Question		
9	(c)		
	Acceptable Answers	Reject	Mark
	(i) points plotted (2), curve (1) blobs(-1) (ii) off the graph (1)		(4)

Total 8 marks

Question Number	Question		
10	(a)		
	Acceptable Answers	Reject	Mark
	(i) proton number (1) (ii) number of protons and neutrons (1) (iii) same number of protons / different number of neutrons (1)		(3)

Question Number	Question		
10	(b)		
	Acceptable Answers	Reject	Mark
	(i) 11 (1) (ii) 12 (1) (iii) 11 (1)		(3)

Question Number	Question		
10	(c)		
	Acceptable Answers	Reject	Mark
	gamma	gamma particle	(1)

Question Number	Question		
10	(d)		
	Acceptable Answers	Reject	Mark
	mutations, cancer, damage tissue, cells, waste problems allow 'deforming'		(1)

Total 8 marks