

IGCSE DA Physics 4437 3F Mark Scheme (Results) Summer 2008

IGCSE

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4437-3F MARK SCHEME

Abbreviations used in mark scheme:

OWTTE - or words to that effect

dop - depending on previous

ecf - error carried forward

ora - or reverse argument

sfs - start from scratch

UP - unit penalty

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
1 (a)(i)	P	p		(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
1 (a)(ii)	Q	q		(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
1 (a)(iii)	Q and R	q and r either order		(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
1 (b)(i)	sloping		sloping and horizontal	1
	straight			1
	independent marks but sloping and horizontal scores (0)			(2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
1 (b)(ii)	horizontal ignore 'straight'			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
1 (c)	less distance (travelled in section R than in section P)			(1)

(Total 7 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (a)(i)	long	allow answers to (i) and (ii) in either order		(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (a)(ii)	frayed			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (b)	stray wire(s)			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (c)(i)	plastic (casing)			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (c)(ii)	small/low current			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
2 (d)	* circuit breaker * double insulation	either one		(1)

(Total 6 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (a)	energy	in either order		1
	information			1 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (b)	D		wrong order	1
	C			1 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (c)(i)	cycles/waves		wrong order	1
	second/unit time			1 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (c)(ii)	speed	velocity (time) period time to travel a wavelength		(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (d)(i)	longitudinal			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (d)(ii)	20 Hz - 20 000 Hz			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
3 (d)(iii)	less than			(1)

(Total 10 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (a)(i)	microphone			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (a)(ii)	kettle/iron/heater/ (electric) fire/ toaster/hairdryer/ soldering iron	there are many other examples credit if the useful energy transfer is from electricity to heat		(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (b)	any falling body		do not credit examples where both falling and rising occur e.g. child's swing or bungee jump unless falling is specified	(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (c)	heat		sound	(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (d)	total energy input total energy output	in either order scores 2 or 0		(2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
4 (e)	kinetic kinetic			1 1 (2)

(Total 8 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
5 (a)(i)	100 000			(1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
5 (a)(ii)	500 000	100 000 × 5 for (1) mark		2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
5 (b)(i)	330	400 - 70 for (1) mark		2 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
5 (b)(ii)	background (count/radiation)			1
	random/variable/not constant			1 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
5 (c)	cosmic rays/rocks/medical etc	any two (1) each		(2)

(Total 9 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
6 (a)	yellow	1 mark if colours reversed		1
	green			1 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
6 (b)(i)	A infra-red		answers reversed	1
	B ultra violet			1 (2)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
6 (b)(ii)	B / ultra violet			(1)

(Total 5 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8(a)(i)	infra red <i>allow phonetic spelling</i>	i.r. IR	microwaves ultraviolet	1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8(a)(ii)	gamma (rays/radiation)	γ gama	X-rays	1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8(b)(i)	same speed (in a vacuum) same velocity (in a vacuum) <i>or (travel at) speed of light (travel at)velocity of light</i>	travel through a vacuum or empty space	transverse	1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8(b)(ii)	water (waves)/waves on water/tidal waves/sea waves/ocean waves	waves on (slinky) spring shaken/moved up and down or side to side waves on a rope moved up and down or side to side <i>S waves ignore 'seismic'</i> mexican wave	P waves analogue wave waves on a CRO	1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
8(b)(iii)	90° <i>energy independent marks</i>	normal/ perpendicular right angles information or data wavefront/front	 crest/vibration/direction/ pattern	1 1 (2)

(Total 6 marks)

Question Number	Correct Answer	Acceptable answers	Reject	Mark
9(a)(i)	voltage = current \times resistance or current = voltage/resistance or resistance = voltage/current	$V = IR$ $I = V/R$ $R = V/I$	$V = C \times R$	1 (1)
9(a)(ii)	4.5 nwn volts or V or J/C or JC^{-1} or $A\Omega$			1 1 (2)

Question Number	Correct Answer	Acceptable Answers	Mark
9(b)	decrease increase	Increase decrease scores 1 decrease decrease scores 1 increase increase scores 1	1 1 (2)

(Total 5 marks)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
11 (a)(i)	not moving (or vibrating) none zero	no <u>kinetic</u> energy no momentum	a response which suggests any kind of movement	1 (1)

Question Number	Correct Answer	Acceptable Answers	Mark
11 (a)(ii)	-273 (°C)	minus 273 -273.15	1 (1)

Question Number	Correct Answer	Acceptable Answers	Reject	Mark
11 (a)(iii)	373 (K)	373.15(K)	373°C	1 (1)

Question Number	Correct Answer	Reject	Mark
11 (b)	particles knock /jostle /collide	diffusion	1
	smaller/invisible /air/water particles		1
	cause a change of direction dop only as 3 rd mark		1
			(3)

(Total 6 marks)

PAPER TOTAL 75 MARKS