

Practice Question Set For A-Level
Subject : Physics
Paper-3 Topic : Practical Skills

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

Question number	Acceptable answers	Additional guidance	Mark
	- The number of charge carriers increases with temperature (1) - So this <u>lowers</u> the resistance (despite the increase in lattice vibrations) (1)	Accept number of electrons.	2

Q2.

Question number	Acceptable answers	Additional guidance	Mark
(i)	A description that makes reference to the following points: - Record nT (where n is at least 5) (1) - Divide measurement by n (1)		2
(ii)	- Anomalies can be spotted (1) - Reduce the effect of random error (1)		2

Q3.

Question number	Acceptable answers	Additional guidance	Mark
(i)	BFL is smooth and thin with a definite minimum and minimum is in range 0.26 m – 0.28 m (1)		1
(ii)	- Values read correctly from candidate's line (1) h to 3 sig fig and T to 4 sf (1)	Values from their curve to within 1 small square with no unit penalty.	2
	A description that makes reference to the following points: - Plot $T^2 h$ against h^2 (1) C is intercept on $T^2 h$ axis (1) OR C is the value of $T^2 h$ when h^2 is zero (1) - Unit is m s^2 (1)		3

Question number	Acceptable answers	Additional guidance	Mark												
(i)*	This question assesses a student's ability to show a coherent and logically structured answer with linkages and fully-sustained reasoning. Marks are awarded for indicative content and for how the answer is structured and shows lines of reasoning. The following table shows how the marks should be awarded for indicative content. <table><tr><th>Number of indicative marking points seen in answer</th><th>Number of marks awarded for indicative marking points</th></tr><tr><td>6</td><td>4</td></tr><tr><td>5–4</td><td>3</td></tr><tr><td>3–2</td><td>2</td></tr><tr><td>1</td><td>1</td></tr><tr><td>0</td><td>0</td></tr></table>	Number of indicative marking points seen in answer	Number of marks awarded for indicative marking points	6	4	5–4	3	3–2	2	1	1	0	0	Guidance on how the mark scheme should be applied: The mark for indicative content should be added to the mark for lines of reasoning. For example an answer with five indicative marking points which is partially structured with some linkages and lines of reasoning scores 4 marks (3 marks for indicative content and 1 mark for partial structure and some linkages and lines of reasoning). If there are no linkages between points, the same five indicative marking points would yield an overall score of 3 marks (3 marks for indicative content and no marks for linkages).	6
Number of indicative marking points seen in answer	Number of marks awarded for indicative marking points														
6	4														
5–4	3														
3–2	2														
1	1														
0	0														

Question number	Acceptable answers	Additional guidance	Mark								
(i)* (continued)	The following table shows how the marks should be awarded for structure and lines of reasoning. <table><tr><td></td><td>Number of marks awarded for structure of answer and sustained line of reasoning</td></tr><tr><td>Answer shows a coherent and logical structure with linkages and fully sustained lines of reasoning demonstrated throughout</td><td>2</td></tr><tr><td>Answer is partially structured with some linkages and lines of reasoning</td><td>1</td></tr><tr><td>Answer has no linkages between points and is unstructured</td><td>0</td></tr></table>		Number of marks awarded for structure of answer and sustained line of reasoning	Answer shows a coherent and logical structure with linkages and fully sustained lines of reasoning demonstrated throughout	2	Answer is partially structured with some linkages and lines of reasoning	1	Answer has no linkages between points and is unstructured	0		
	Number of marks awarded for structure of answer and sustained line of reasoning										
Answer shows a coherent and logical structure with linkages and fully sustained lines of reasoning demonstrated throughout	2										
Answer is partially structured with some linkages and lines of reasoning	1										
Answer has no linkages between points and is unstructured	0										

Question number	Acceptable answers	Additional guidance	Mark
(i)* (continued)	Indicative content - Determine the natural frequency by displacing the tea in the cup and measuring the time for oscillations - Time (5 to 10 or 'suitable number' if test run mentioned) full oscillations and divide by the number - Carry the tea for a known volume of tea for fixed number of steps at a steady pace - Determine the frequency of the gait - Measure the quantity of tea remaining - Repeat for other walking paces		
(ii)	A description that makes reference to the following points: - Plot volume of remaining tea against walking frequency (1) - Determine whether there is a relationship between step frequency and spillage (1) - If there is, determine whether maximum spillage occurs at or near the natural frequency (1)		3