

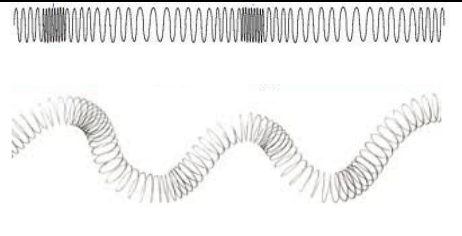


FORM 5

PHYSICS

MARKING SCHEME

SECTION A			70 MARKS
Question	Answer	Mark	Additional Guidelines
1. a.	created; destroyed; changed	1,1,1	
1. b. i.	electrical	1	
1. b. ii.	light	1	
1. b. iii.	sound	1	
1. b. iv.	heat	1	
1. c. i.	30 W	1	accept '30'
1. c. ii.	90%	2	accept also '0.9'
2. a. i.	178 g	2	1 mark for working
2. a. ii.	0.178 kg	1	accept '0.178'
2. a. iii.	1.78 N	2	1 mark for correct unit
2. b. i.	redwood	1	
2. b. ii.	ρ of redwood < ρ of water	1	
2. c. i.	equal to 7.9 g/cm ³	1	
2. c. ii.	ρ depends on material only	2	
3. a. i.	0.8 m	2	1 mark for correct unit
3. a. ii.	anti-clockwise	1	
3. b.	arrow pointing downwards from pivot	1	
3. c. i.	400 Nm	2	1 mark for correct unit
3. c. ii.	500 N	2	1 mark if student applies principle of moments
3. c. iii.	1200 N	2	1 mark for correct unit
4. a. i.	ray of light through optical centre	1	
4. a. ii.	virtual image	1	
4. a. iii.	magnified	1	accept 'upright'
4. a. iv.	magnifying glass	1	
4. b. i.	3 cm	1	accept '3'
4. b. ii.	4 cm	1	accept '4'
4. b. iii.	x 2	2	accept '2'
4. b. iv.	6 cm	2	accept '6'
5. a. i.	diode	1	
5. a. ii.	switch	1	
5. a. iii.	thermistor	1	
5. a. iv.	light dependent resistor	1	
5. b. i.	6 Ω	2	1 mark for correct unit
5. b. ii.	2 A	2	1 mark for correct unit
5. b. iii.	24 W	2	1 mark for correct unit

Question	Answer	Mark	Additional Guidelines
6. a. i.	0.5 m^2	2	1 mark for correct unit
6. a. ii.	1400 Pa or 1400 N/m^2	2	1 mark for correct unit
6. b. i.	increases; as area decreases, pressure increases	1,1	accept that area and pressure are inversely proportional
6. b. ii.	increases; as force increases, pressure increases	1,1	accept that force and pressure are directly proportional
6. c.	less contact area results in higher pressure on ground giving more grip	1,1	
7. a.		1 1	accept alternative diagrams which show clearly the difference between the two types of waves
7. b.	longitudinal wave – in and out transverse wave – up and down	1 1	
7. c.	transverse and longitudinal according to the diagrams	1 1	
7. d. i.	longitudinal waves	1	
7. d. ii.	transverse waves	1	
7. e.	165 Hz	2	1 mark for correct unit

SECTION B		100 MARKS	
Question	Answer	Mark	Additional Guidelines
8. a.	arrow pointing away from B towards C	1	
8. b.	lines drawn with arrow from N to S	2	no marks awarded in absence / incorrect direction of arrow
8. c. i.	a magnetic field	1	
8. c. ii.	plotting compass	1	
8. d. i.	out of the page towards you	2	
8. d. ii.	Fleming's left hand rule	2	
8. d. iii.	<ul style="list-style-type: none"> increase current flow use stronger magnets (stronger external field) increase number of wires in the magnetic fields 	1,1	accept any TWO
8. e. i.	Graph <ul style="list-style-type: none"> has correct axis is drawn over more than half the graph has correct scale is a straight line passes through origin 	1 1 1 1 1	
8. e. ii.	directly	2	
8. e. iii.	1 A	2	

Question	Answer	Mark	Additional Guidelines
9. a. i.	20 m/s	2	accept '20'
9. a. ii.	100 s	2	1 mark for correct unit
9. a. iii.	0.4 m/s ²	3	1 mark for correct identification of u and v 1 mark for correct working 1 mark for correct unit
9. b. i.	500 m	3	1 mark for relating area under the graph to distance covered 1 mark for correct working 1 mark for correct unit
9. b. ii.	2500 m	4	1 mark correct unit
9. c. i.	5	1	
	3	1	
	1		
	4	1	
	2	1	
9. c. ii.	increases	2	
10. a. i.	protons	1	
10. a. ii.	neutrons	1	
10. b. i.	atoms/nuclei of the same element having the same proton number Z but different nucleon number A	2	
10. b. ii.	${}_{6}^{12}\text{C}$	2	
10. c. i.	background	1	
10. c. ii.	rocks; bricks of buildings; Sun; outer space	1,1	any TWO
10. c. iii.	Geiger-Muller tube	2	accept 'GM' tube
10. d. i.	800	1	
10. d. ii.	the time taken for half the nuclei of a sample of a radioactive substance to decay	1	
		1	
10. d. iii.	5 min	2	1 mark for correct working
10. d. iv.	200 counts/min	2	
10. d. v.	216 counts/min	2	

Question	Answer	Mark	Additional Guidelines
11. a.	current, voltage, temperature	1,1,1	
11. b. i.	lamp/bulb, ammeter	1, 1	
11. b. ii.	appropriate positions	1, 1	
11. c. i.	graph drawing through all pts.	1	
11. c. ii.	6 V	1	
11. c. iii.	1.4 A	1	
11. c. iv.	5.3 Ω	3	1 mark for correct working 1 mark for correct unit
11. c. v.	changes	1	
11. c. vi.	no	2	
11. d. i.	melts	2	do not accept 'lamp burns'
11. d. ii.	no current flows	2	
12.			
12. a. i.	thermometer	1	
	immersion heater / heater	1	
	stirrer	1	
	beaker/calorimeter	1	
12. a. ii.	mass of orange juice;	1	
	change in temp. of orange juice;	1	
	quantity of heat supplied	1	
12. a. iii.	stirrer	1	
12. a. iv.	lagging around container, repeated readings, etc.	2	
12. b. i.	400 J	2	1 mark for correct unit
12. b. ii.	400 J	2	accept '400'
12. b. iii.	kinetic; heat; sound	1,1,1	
12. c.	325J	3	1 mark for correct working 1 mark for correct unit

Please Note: When marking questions that involve calculations, apply the 'follow through' rule. This means that if a student gives a wrong value for part (a) of a question and then uses the value of (a) in the subsequent calculations, marks should be deducted for part (a) only. The subsequent parts should be given full marks if these are correct.