Rewarding Learning

General Certificate of Secondary Education
2015–2016

Science: Single Award

Unit 3 (Physics)

Foundation Tier

[GSS31]

WEDNESDAY 25 MAY 2016, AFTERNOON

MARK SCHEME

General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

				AVAILABLE MARKS
1	(a)	Cornea ——————— bends light [1] retina ——————— image forms here [1]	[2]	
	(b)	Convex	[1]	
	(c)	B	[1]	4
2	(a)	(i) D	[1]	
		(ii) D	[1]	
		(iii) B	[1]	
	(b)	(i) 660/2 [1] 330 m/s [1]	[2]	
		(ii) Echo	[1]	6
3	(a)	(i) 230 [1] 210 [1]	[2]	
		(ii) **Input** energy the same/500 J	[1]	
		(iii) Battery [1] **most** useful energy/**least** wasted energy [1]	[2]	
	(b)	Created – destroyed (either order) [1] changed [1]	[2]	7
4	(a)	(i) 3.2 s	[1]	
		(ii) 20/10 [1] 2 [1]	[2]	
		(iii) C – D	[1]	
		(iv) Stopped [1] no change to distance [1]	[2]	
	(b)	(i) More drivers are caught (speeding) over time	[1]	
		(ii) Drivers more aware of where these cameras are	[1]	8

					AVAILABLE MARKS
5	(a)	(i)	A and C	[1]	
		(ii)	Meter 1 – ammeter [1] Meter 2 – voltmeter [1]	[2]	
		(iii)	Ohm	[1]	
	(b)	(i)	Earth wire/**cable** grip/insulated wires	[1]	
		(ii)	The more current the hotter the fuse [1] **wire** melts (when too hot) [1]	[2]	
		(iii)	7 A	[1]	8
6	(a)	(i)	Works as a driver	[1]	
		(ii)	Increases [1] alcohol slows brain/reaction time increases [1]	[2]	
	(b)	(i)	The **distance** covered from **when** brakes are first applied until the vehicle **stops**	[1]	
		(ii)	Increases	[1]	
		(iii)	13 m	[1]	6
7	(a)	(i)	Any **two** from: • no output until **5 m/s** • increased output as wind increases from 5 or up to 17.5 m/s/ 1200 W • levels off at **1200** between wind speeds of **17.5** or **20 m/s** • drops after 20 m/s	[2]	
		(ii)	The blade moves the magnet [1] inside the coil of wires [1]	[2]	
	(b)		Advantage – less fossil fuels used/less global warming [1] Disadvantage – unsightly/noise/uses land [1]	[2]	6
8	(a)	(i)	For comparison/show (background) radiation	[1]	
		(ii)	Two	[1]	
	(b)		Gamma radiation [1] as could infect patients [1] kill microbes/sterilise [1]	[3]	
	(c)		Activity falls with time [1] and then stays the same after day 7/15 cpm	[2]	7

AVAILABLE MARKS

9 (a) Indicative content

- current model is heliocentric
- Sun in the centre
- planets orbit the Sun
- name and position of planet – any
- name and position of planet – any other
- geocentric is the previous model/old model
- Earth in centre in geocentric model/old model
- geocentric model had fewer planets/different order

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe fully the Solar System using **seven or eight** of the points above, in a logical sequence. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates use some appropriate specialist terms to describe the Solar System using **four to six** of the points above, in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates describe the Solar System using **one to three** of the above points. However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and have made limited use of specialist terms. The form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

(b) (i) A (huge) collection of stars/solar system**s** [1]

(ii) Milky Way [1]

8

Total **60**