



Rewarding Learning

**General Certificate of Secondary Education
2017–2018**

Science: Single Award

Unit 3 (Physics)

Foundation Tier

[GSS31]

WEDNESDAY 23 MAY 2018, 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.

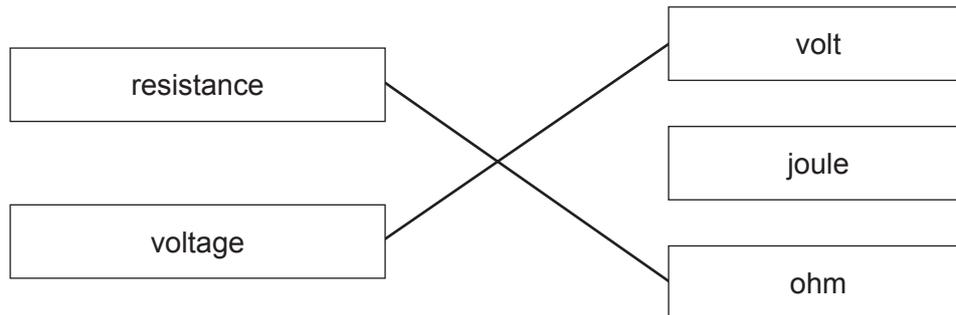
It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience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

1 (a) (i) Ammeter [1]

(ii) 8A [1]

(b) **Property**

Unit



1 correct [1]

all correct [2] [2]

(c) Series [1]
get dimmer [1] [2]

2 (a) Saturn [1]

(b) (As the distance from the Sun increases) the surface temperature decreases [1]

(c) Moving away from each other [1]

(d) Moon [1]
planet [1] [2]

(e) Asteroid/meteor [1]

AVAILABLE
MARKS

6

6

- 3 (a) 24 m [1]
96 m [1] [2]

(b)

	Decrease	No effect	Increase
reaction time			✓
thinking distance			✓
braking distance		✓	

[1] mark for each row [3]

- (c) (i) (The greater your mass) the lower the blood alcohol percentage [1]

(ii) The greater the number of drinks the higher the blood alcohol content [1]

- (d) (i) 10.00 pm [1]

(ii) At 8.00 am she had 104–108 mg/100 cm³ of blood/
which is over the legal limit [1]
consequence [1] [2]

- 4 (a) Vibrations [1]
energy [1] [2]

(b) (i) Wavelength/frequency [1]

(ii) Amplitude [1]

(c) (i) 4 [1]

(ii) 50 000 Hz [1]

(d) 20 Hz [1]

(e) (i) Microwave [1]

(ii) Cell [1]

(f) (i) 7–8 m [1]

(ii) **Brain** tumour [1]

AVAILABLE
MARKS

10

11

- 5 (a) (i) Energy which will not run out [1]
- (ii) Blade spins [1]
magnet and coil of wire [1]
implied movement [1] [3]
- (iii) Expensive to build/maintain/set up [1]
- (b) (i) Gas and coal [1]
- (ii) 500 – 200 [1]
300 [1] [2]
- (iii) Wind is unreliable [1]

- 6 (a) **Indicative content:**
- lens, cornea, retina
 - lens too weak/eyeball too short/lens too thin
 - light not refracted enough by the lens/cornea
 - light would be focused behind the retina
 - near images are not clear/**blurry**
 - far images are **clear**
 - convex lens used to correct
 - this converges light **more**

	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe and explain fully long sight (using five or more of the above points) 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 and explain long sight (using three or four of the above points) 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/explain long sight (using one or two of the above points). However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and have made little use of specialist scientific terms. The form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

- (b) (i) All 5 points [2]
4 points [1]
Line [1] [3]
- (ii) As object distance increases, image distances decreases [1]

AVAILABLE
MARKS

9

10

			AVAILABLE MARKS
7	(a) (i)	Beta [1] passes through paper (and air) [1] stopped by aluminium (and lead) [1]	[3]
	(ii)	Radiation which is all around us	[1]
	(iii)	Cosmic rays	[1]
	(b)	As radon increases, % chance of lung cancer increases Radon gives smokers more chance of lung cancer	[1]
	(c)	3.6 to 3.8 days	[1]
	(d)	$\frac{1}{4}$	[1]
			8
Total			60