Rewarding Learning

General Certificate of Secondary Education
2013–2014

Science: Single Award

Unit 3 (Physics)

Foundation Tier

[GSS31]

FRIDAY 15 NOVEMBER 2013, 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.

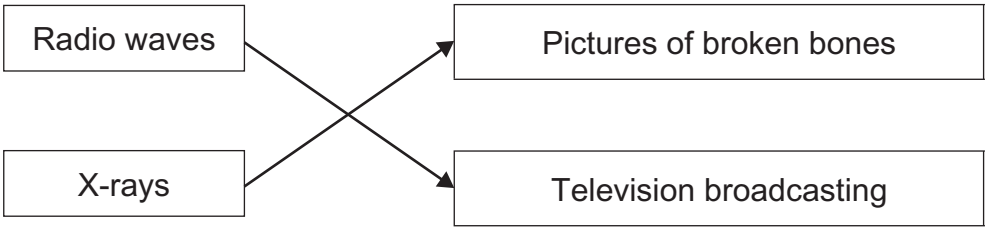
The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

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)**	**(i)**	TV	[1]	
		(ii)	Microphone	[1]	
	(b)		Created/destroyed [either way round = 1 mark] Changed [1]	[2]	
	(c)	**(i)**	Television	[1]	
		(ii)	Kettle	[1]	
	(d)		30A	[1]	7
2	**(a)**		**Any 2 from** • same distance between source + detector • same source/amount of radiation • same distance between lead + source • same distance between lead + detector	[2]	
	(b)	**(i)**	Count rate falls [1] to a minimum of 5cps [1]	[2]	
		(ii)	Background	[1]	
		(iii)	30 mm	[1]	
	(c)		Sterilisation/preservation of food/kills cancer cells	[1]	7
3	**(a)**	**(i)**	Gas/Oil	[1]	
		(ii)	6%/1%	[1]	
	(b)	**(i)**	Will not run out	[1]	
		(ii)	Wind/hydroelectric/wave/solar	[1]	
	(c)	**(i)**	65365 – 64390 = 975	[1]	
		(ii)	975 × 20 [1] 19500p/£195 [2]	[2]	
		(iii)	**Any 2 from** • energy saving bulbs • do not leave TV on standby • other acceptable response	[2]	9

				AVAILABLE MARKS
4	**(a)**	**(i)** Skin cancer	[1]	
		(ii) **Any 2 from** • reduce exposure time • shady area • higher factor sunscreen	[2]	
	(b)	**(i)** Microwaves	[1]	
		(ii) Cell	[1]	
	(c)			
		1 mark each	[2]	
	(d)	Similarity = **any one from** • travel at same speed/speed of light (in a vacuum) • transverse waves/travel through a vacuum • all carry energy [1]		
		Difference = wavelength/frequency/energy amounts [1]	[2]	9
5	**(a)**	**(i)** 5 points correct = 2 marks 4/3 points = 1 mark correct line = 1 mark	[3]	
		(ii) As speed increases, braking distance increases	[1]	
		(iii) Line starting from 0,0 and with greater gradient	[1]	
	(b)	More alcohol increases risk of crashing [1] as it slows reactions/increasing thinking distance [1] legal levels of alcohol still increased risk [1]	[3]	8

				AVAILABLE MARKS
6	**(a)**	0.8	[1]	
	(b)	**(i)** Wavelength decreases	[1]	
		(ii) Hertz/Hz	[1]	
	(c)	**(i)** Frequency/pitch [1] too high for humans to hear/above 20 kHz [1]	[2]	
		(ii) 330 × 0.4 [1] 330 × 0.2 [2] 66 m [3]	[3]	8
7	**(a)**	**(i)** 150 million km	[1]	
		(ii) **Any 3 from** • Neptune further • By 4400 million km • Mercury is faster • By 38 km/s	[3]	
	(b)	Geocentric has earth in middle/Heliocentric has sun at centre [1] Heliocentric more planets [1]	[2]	6

8 Indicative content:

- blue wire connects to pin A
- brown wire connects to pin B
- green/yellow wire connects to pin C
- name blue wire/pin A as neutral
- name brown wire/pin B as live
- name green/yellow wire or pin C as earth
- naming 1 other safety feature from:
  Cable grip/plastic cover/fuse
- correct explanation of safety feature

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe fully, in a logical sequence how to wire a 3-pin plug safely including another safety feature (using at least **seven** of the above points). 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 partially describe, in a logical sequence, how to wire a 3-pin plug safely including another safety feature (using **four to six** of the above points). They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3–4]
C	Candidates describe how to wire a 3-pin plug safely including another safety feature (using **one to three** of the above points). However these are not in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms. The form and style are of a limited standard.	[1–2]
D	Response not worthy of credit	[0]

[6] 6

Total **60**

AVAILABLE MARKS