Rewarding Learning

General Certificate of Secondary Education
2014–2015

Science: Single Award

Unit 3 (Physics)

Foundation Tier

[GSS31]

FRIDAY 14 NOVEMBER 2014, MORNING

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)**	Solar System	[1]	
		(ii)	Venus [1] Saturn [1]	[2]	
		(iii)	1. A [1] 2. H [1]	[2]	
	(b)		Moon, Earth, Milky Way, Universe 4 in right order [2] any 2 in right order [1]	[2]	7
2	**(a)**		A – Retina [1] B – Cornea [1]	[2]	
	(b)		Convex	[1]	3
3	**(a)**		Correct symbol for voltmeter [1] wired in parallel across the bulb [1]	[2]	
	(b)		Change the number of cells/batteries/higher voltage battery	[1]	
	(c)	**(i)**	2A	[1]	
		(ii)	3/2 [1] 1.5 Ω [1]	[2]	6
4	**(a)**		Ruler B [1] the ruler fell the shortest distance [1]	[2]	
	(b)	**(i)**	0.20	[1]	
		(ii)	The reaction time would be more	[1]	
	(c)		More drinks increase alcohol content [1] higher the body mass the less blood alcohol content [1]	[2]	6
5	**(a)**	**(i)**	Mallard	[1]	
		(ii)	The chaffinch [1] it has a hearing range above 20000 Hz/20 kHz [1]	[2]	
		(iii)	18 kHz	[1]	
	(b)		20 Hz	[1]	5

					AVAILABLE MARKS
6	**(a)**		Current too high [1] fuse wire melts and breaks/gap in circuit [1]	[2]	
	(b)		Quicker to reset/does not need replacing [1] quicker to switch off under fault conditions [1] (either order)	[2]	4
7	**(a)**	**(i)**	Any **one** from: • they all travel at the speed of light • all carry energy • all transverse	[1]	
		(ii)	Galaxy Evolution Explorer	[1]	
		(iii)	Hot gas	[1]	
	(b)		Unable to survive for the length of time to reach the planet/distance too great [1] cannot carry sufficient food/water/fuel/oxygen [1]	[2]	5
8	**(a)**	**(i)**	Background	[1]	
		(ii)	Carrots	[1]	
	(b)		It would only reduce their life expectancy 2100 seconds per year makes little difference.	[1]	
	(c)	**(i)**	Count decreases with time [1] faster decrease at start [1]	[2]	
		(ii)	1.25 (1.2 – 1.3)	[1]	
		(iii)	$\frac{1}{4}$	[1]	7
9	**(a)**		3 m	[1]	
	(b)	**(i)**	4 m	[1]	
		(ii)	$\frac{330}{4}$ [1] 82.5 [1]	[2]	4

10 (a) Dead plants/animals [1]
compressed/under pressure/high temperature [1]
for millions of years [1] [3]

(b) (i) Coal, oil and gas [1]

(ii) Total generated has decreased over time [1]
oil/gas has decreased [1]
wind, wave and solar has increased [1] [3]

(c) Indicative content

- renewable
- good for economy/creates jobs
- reduce use of fossil fuels
- no gas (CO_2) emissions/no polluting gases
- unreliable – not always windy or switch off at high speeds
- hazard to shipping/destroys habitats
- expensive to build
- unsightly
- expensive to get electricity from farm to main-land

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe fully, in a logical sequence, the advantages and disadvantages of using offshore wind farms (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, the advantages and disadvantages of using offshore wind farms (using **three 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 the advantages and disadvantages of using offshore wind farms (using **one to two** 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] 13

Total **60**

AVAILABLE MARKS