New Specification

Rewarding Learning

General Certificate of Secondary Education
2012–2013

Science: Single Award

Unit 3 (Physics)

Foundation Tier

[GSS31]

WEDNESDAY 14 NOVEMBER 2012
1.30 pm–2.30 pm

MARK SCHEME

		AVAILABLE MARKS
1 **(a)** **(i)** Mercury [1]		
(ii) Its surface temperature is too hot [not just 470°C] [1]		
(b) star [1] gravity [1] fusion [1] [3]		5
2 **(a)** **(i)** ammeter. [1]		
(ii) parallel [1] parallel [1] stays lit [1] [3]		

(b)

Switch 1	Switch 2	Bulb A	Bulb B
open	open	✗	✗
closed	open	✓	✗

one mark for each correct row. [2] 6

3 **(a)** B [1]

(b) force [1]
slows down/stops/resists/opposes/heats [1] [2]

(c) **(i)** stopped [1]

(ii) 10 m [1]

(iii) 5 m/s [ncm] [1] 6

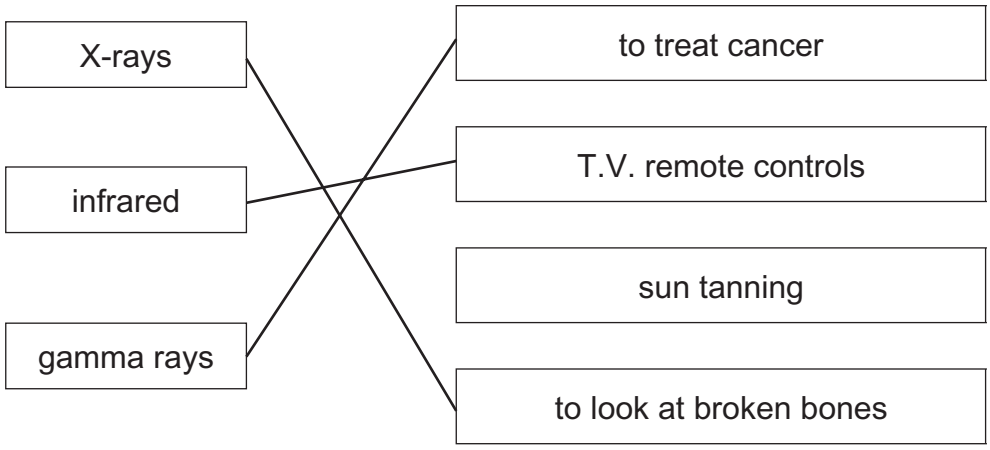
AVAILABLE MARKS

4 **(a)** **(i)** *Any two from:*
- short term use [1–5 yrs.] no difference in risk
- longer use more risk
- increased use using mobile compared to cordless [2]

(ii) Brain [1]

(b) *Any two from:*
- signal to mast/base station/transmitter
- relay
- microwave [2]

(c)



[3] 8

5 **(a)** Two bars correct [1]
All 3 bars correct [2] [2]

(b) **(i)** 34 m [1]

(ii) The distance it takes for the car to come to rest once the brakes have been applied. [1]

(iii) No change in the thinking distance [1]

(c) **(i)** *Any two from:*
- same car
- same type of tyres
- same driver [2]

(ii) 5× [1]

(iii) The faster you go the longer the skid [1]
the length of the skid depends on the type of surface [1] [2] 10

				AVAILABLE MARKS
6	(a)	(i)	longitudinal [1]	
		(ii)	vibrate/move backwards and forwards [1] in same direction as hand movement/parallel to direction of hand movement [1] [parallel to direction of energy flow/wave travel = 2] [2]	
		(iii)	0.1 m [1]	
		(iv)	0.3 m [1]	
	(b)		4 [1]	
	(c)		20 × 90 [1] 1800 m/s [2] [2]	8
7	(a)		Refracted by lens [1] Image forms on retina [1] [2]	
	(b)	(i)	Lens too strong/eyeball too long [1] Can see near things clearly/Cannot see far things clearly [1] Light focused in front retina [1] [3]	
		(ii)	Diverging lens/concave lens [1]	6

AVAILABLE MARKS

8 **(a)** Indicative Content:

- Place sheet of lead/aluminium/paper in front of source
- Make sure distance between the source and sheet is constant
- Make sure distance between the radiation counter and sheet is constant
- Measure the amount of radiation which passes through
- If radiation stopped by lead it is gamma
- If radiation stopped by aluminium it is beta
- If radiation stopped by paper it is alpha
- Same thickness of sheet

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe and explain fully (using **five** or more of the above points) the experiment 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 the experiment (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 the experiment 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 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]

(b) **(i)** time it takes [1]
for the radiation count/radioactivity to fall by half [1] [2]

(ii) B [1]
Beta can be stopped by certain thicknesses of aluminium/ appropriate reference to either alpha or gamma [1]
has a long half-life [1]
or implied [2]

11

Total **60**