



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**

- 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]
- 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 | <i>x</i> | <i>x</i> |
| closed | open | ✓ | <i>x</i> |
- one mark for each correct row. [2]
- 3 (a) B [1]
(b) force [1]
slows down/stops/resists/opposes/heats [1] [2]
(c) (i) stopped [1]
(ii) 10m [1]
(iii) 5 m/s [ncm] [1]

AVAILABLE
MARKS

5

6

6

- 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

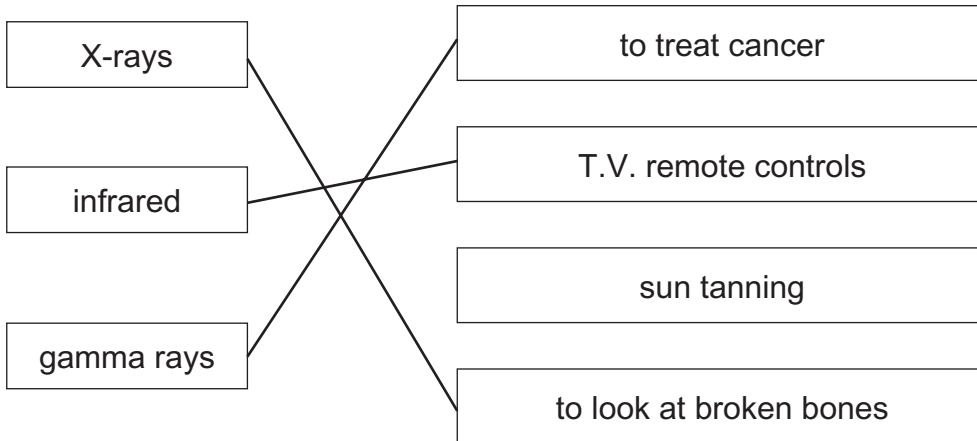
[2]

(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]	8	
	(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]		
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

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]

Total

11

60

AVAILABLE
MARKS