

1.7 B ✓✓

(2)

QUESTION 8/VRAAG 8

- 8.1 Diffraction is the ability of a wave to spread out in wave fronts ✓ as the wave passes through a small aperture or around a sharp edge. ✓
Diffraksie is die vermoë van 'n golf om uit te spreid in golffronte soos wat die golf deur 'n klein opening of om 'n skerp rand/kant beweeg.

(2)

8.2	Criteria for investigative question/Riglyne vir ondersoekende vraag	
	The dependent and independent variables are stated correctly. <i>Die afhanklike en onafhanklike veranderlikes korrek genoem.</i>	✓
	Ask the relationship between the dependent and independent variables in a question, not as a statement. The question may not be written in a way that the answer is yes or no. <i>Vra die verband tussen die afhanklike en onafhanklike veranderlike as 'n vraag, nie 'n stelling nie. Die vraag mag nie op so 'n manier geformuleer word dat die antwoord ja of nee is nie.</i>	✓
	Dependent variable/Afhanklike veranderlike: degree of diffraction/ <i>mate van diffraksie</i> Independent variable/Onafhanklike veranderlike: wavelength/ <i>golflengte</i>	

Examples/Voorbeelde:

What is the relationship between the wavelength of a light ray and the degree of diffraction?

Wat is die verband tussen die golflengte van 'n ligstraal en die mate van diffraksie?

OR/OF

How does a change in wavelength affect the degree of diffraction?

Hoe beïnvloed 'n verandering in golflengte die mate van diffraksie?

(2)

- 8.3 Degree of diffraction is directly proportional to the wavelength. ✓✓
Mate van diffraksie is direk eweredig aan die golflengte.

OR/OF

Degree of diffraction $\propto \lambda$. ✓✓

Mate van diffraksie $\propto \lambda$.

(2)

- 8.4 Red/Rooi ✓

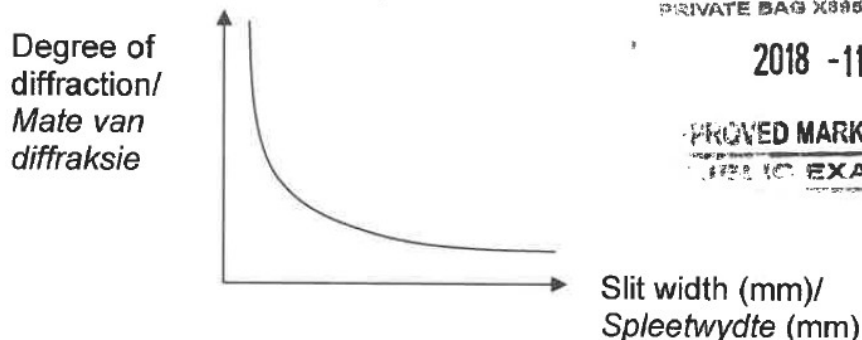
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(1)

- 8.5 Line should indicate inverse proportionality ✓✓
Lyn moet omgekeerde eweredigheid aandui

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(2)



[9]

1.7 B ✓✓

(2)

QUESTION/VRAAG 7

7.1	Criteria for investigative question:/Kriteria vir ondersoekende vraag	
	The dependent and independent variables are stated correctly. <i>Die afhanklike en onafhanklike veranderlikes korrek genoem.</i>	✓
	State the relationship between the dependent and independent variables. <i>Stel die verwantskap tussen die afhanklike en onafhanklike veranderlike.</i>	✓
	Dependent variable/ <i>afhanklike veranderlike</i> : degree of diffraction/ <i>mate van diffraksie</i> Independent variable/ <i>onafhanklike veranderlike</i> : slit width/ <i>spleetwydte</i>	

Examples:/Voorbeelde:

What is the relationship between slit width and degree of diffraction?

Wat is die verhouding tussen spleetwydte en mate van diffraksie?

OR/OF

How does the width of the central bright band change as the slit width changes?

Hoe word die breedte van die sentrale helder band beïnvloed deur die verandering in spleetwydte?

(2)

7.2 Every point of a wave front serves as a point source of spherical, secondary waves that move forward with the same speed as the wave. ✓✓

Elke punt van 'n golffront dien as 'n puntbron van sferiese, sekondêre golwe wat voortwaarts beweeg teen dieselfde spoed as die golf. ✓✓

(2)

7.3 Decrease ✓

Neem af ✓

(1)

7.4 The degree/amount of diffraction is inversely proportional to the slit width. ✓✓

OR Degree of diffraction $\propto 1/w$

Die mate van diffraksie is omgekeerd eweredig aan die spleetwydte. ✓✓

OF *Mate van diffraksie* $\propto 1/w$

(2)

7.5 Increase ✓

Toeneem ✓

(1)

[8]

QUESTION/VRAAG 7

- 7.1 The ability of a wave to spread out ✓ in wave fronts as they pass through a small aperture/barrier/opening/slit or around a sharp edge. ✓
Die vermoë van 'n golf om in golffronte uit te sprei soos hulle deur 'n klein versperring/opening/spleet of om 'n skerp kant beweeg. (2)
- 7.2 Every point on a wave front acts as a source of secondary/new wavelets which spread out as in all directions with the same speed as the wave itself. ✓✓
Elke punt op 'n golffront reageer soos 'n bron van sekondêre/nuwe golfies wat in alle rigtings met dieselfde spoed as die golf uitsprei. (2)
- 7.3.1 Bright bands-Constructive✓ and Dark bands-destructive interference.✓
Helder bande-Konstruktiewe en Donker bande-destruktiewe interferensie. (2)
- 7.3.2 BROADER ✓✓/BRĒER (2)
- 7.4.1 DECREASES ✓ (1)
- 7.4.2 DECREASES ✓ (1)

[10]

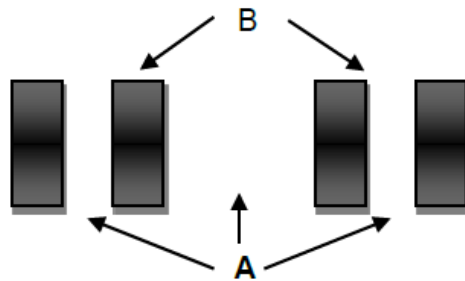
1.5 B ✓✓

1.7 D ✓✓

QUESTION/VRAAG 10

10.1 Light consisting of only one wavelength. ✓
 Lig wat uit net een golflengte bestaan. ✓ (1)

10.2



Broader Central band
 Breër sentraleband ✓

Alternative light (bright) and dark bands.
 Afwisselende helder (lig) en donker bande ✓

A: central band and bright (light) bands = CONSTRUCTIVE INTERFERENCES ✓
sentraleband en helder (lig)bande = KONSTRUKTIEWE INTERFERENSIE/STEURINGE ✓

B: dark bands = DESTRUCTIVE INTERFERENCES ✓
donkerbande = DESTRUKTIEWE INTERFERENSIE/STEURINGE ✓ (4)

10.3 10.3.1 INCREASES/NEEM TOE ✓ (1)

10.3.2 INCREASES/NEEM TOE ✓

⊙ The narrower the opening, the greater the degree of diffraction. ✓
Hoe smaller die opening, hoe groter die mate van diffraksie. ✓

OR/OF

Degree of diffraction $\propto \frac{1}{\text{Width of opening}}$ ✓

Mate van diffraksie $\propto \frac{1}{\text{Wydte van opening}}$ ✓

(2)
[8]

QUESTION 8/VRAAG 8

- 8.1 The bending of a wave as it passes around the edges of an object.
Die buiging van 'n golf soos dit om die kante van 'n voorwerp beweeg.
OR/OF
The bending of a wave around an obstacle or the corners of an narrow opening.
Die buiging van 'n golf om 'n versperring of deur die hoeke van 'n nou spleet/opening.
OR/OF
The ability of a wave to spread out in wave fronts as they pass through a small aperture or around a sharp edge.
Die vermoë van 'n golf om in golffronte uit te spreid soos hulle deur 'n klein opening of om 'n skerp kant beweeg. (2)
- 8.2 A broad central bright band ✓with alternating bright and dark band (of decreasing intensity) on either side of it. ✓ / 'n Breë, sentrale helder band met afwisselende helder en donker bande (van afnemende intensiteit) aan weerskante. (2)
- 8.3 Huygen's principle/ *Huygen se beginsel*✓
Principle of superposition / *Beginsel van superposisie*✓ (2)
- 8.4.1 Patterns become narrower / *Patrone word nouer.*✓ (1)
- 8.4.2 Brightness is unchanged/remains the same./ *Helderheid is onveranderderd / bly dieselfe*✓ (1)
- 8.5 The patterns become narrower / *Patrone word nouer.*✓ (1)

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2.5 B (2)

2.6 A (2)

QUESTION/VRAAG 8

8.1	Every point in a wave front acts as the source of secondary wavelets \checkmark that spread out in all directions with the same speed as a wave. \checkmark <i>Elke punt op die golffront dien as 'n bron van sekondêre golwe \checkmark wat uitsprei in alle rigtings met dieselfde spoed as die golf. \checkmark</i>		(2)
8.2	A – Central bright broad band/ <i>breë sentrale ligte band</i> \checkmark B – dark band/ <i>donker bande</i> \checkmark		(2)
8.3	A \checkmark		(1)
8.4	8.4.1	broader/ <i>breër</i> \checkmark	(1)
	8.4.2	broader/ <i>breër</i> \checkmark	(1)
8.5	diff α wavelength/ <i>diff α golflengte</i> $\checkmark\checkmark$		(2)

[9]

Golwe Memo

Modelvraestel 2013

1.5 C ✓✓ (2)

QUESTION 9/VRAAG 9

9.1 The bending/spreading of waves as they pass through a narrow opening or around corners/obstacles. ✓✓
Die buiging/spreiding van golwe wanneer hulle 'n smal opening of om hoeke/versperrings beweeg. (2)

9.2

9.2.1 Greater than/Groter as ✓ (1)

9.2.2 Dimmer than/Dowwer as ✓ (1)

9.2.3 Greater than/Groter as ✓ (1)

9.2.4 Every point on a wave front acts as a source of new wavelets that move forward with the same speed as the wave. ✓✓
Elke punt op 'n golffront wat dien as 'n bron van nuwe golwe wat voortbeweeg teen dieselfde spoed as die golf. (2)

[7]