

1.10 C/B✓✓

QUESTION 6/VRAAG 6

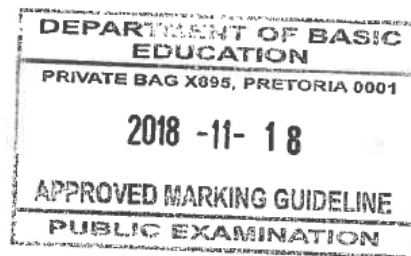
6.1	Difference/Verskil	Similarity/Ooreenkoms	
	Amplitudes✓	Wavelength✓/Golflengte Period/Tydperk Frequency/Frekwensie Transverse/Transversaal (Any one)/(Enige een)	(2)

6.2.1 A and/en B✓

OR/OF
C and/en D✓

OR/OF
B and/en C

OR/OF
A and/en D



(1)

6.2.2 15 (mm) ✓ (1)

6.3 The number of waves/wave pulses✓ passing a point per second.✓ *IDie getal golwe/golfpulse wat per sekonde by 'n punt verby beweeg.* (2)

6.4.1 $f = \frac{1}{T}$ ✓
 $= \frac{1}{1,5}$ ✓
 $= 0,67 \text{ Hz}$ ✓ (3)

6.4.2	POSITIVE MARKING FROM 6.4.1 POSITIEWE NASIEN VANAF 6.1 OPTION 1/OPSIE 1 $v = f\lambda$ ✓ $= (0,67)(0,1)$ ✓ $= 0,067 \text{ m}\cdot\text{s}^{-1}$ ✓	OPTION 2/OPSIE 2 $v = \frac{\Delta x}{\Delta t}$ or/of speed = $\frac{\text{distance}}{\text{time}}$ ✓ $= \frac{0,1}{1,5}$ ✓ $= 0,067 \text{ m}\cdot\text{s}^{-1}$	(3)
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[12]

QUESTION 7/VRAAG 7

7.1.1 What is the relationship between the speed of sound and temperature? ✓✓/
Wat is die verband tussen die spoed van klank en temperatuur?

OR/OF

How will the temperature affect the speed of sound? ✓✓/Hoe sal die temperatuur die spoed van klank beïnvloed?

OR/OF

What is the relationship between the time taken for the sound to travel and temperature? ✓✓/ Wat is die verband tussen die spoed van klank en temperatuur?

(2)

Marking criteria/Nasienriglyne:	
Dependent and independent variables correctly identified. Afhanklike en onafhanklike veranderlikes korrek geïdentifiseer.	✓
Ask a question about the relationship between the independent and dependent variables./Vra 'n vraag oor die verwantskap tussen die afhanklike en onafhanklike veranderlikes.	✓

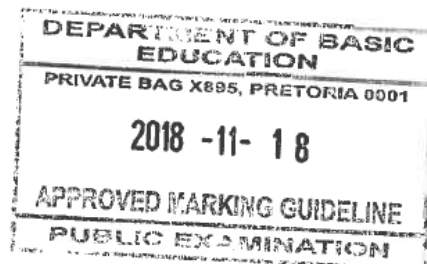
7.1.2 Temperature ✓/Temperatuur

(1)

7.1.3 Speed of sound ✓/Time taken for the sound to travel./Spoed van klank/Tyd geneem vir die klank om te beweeg.

(1)

7.2 $v = \frac{\Delta x}{\Delta t}$ or/of speed = $\frac{\text{distance}}{\text{time}}$ ✓
 $= \frac{50}{0,146}$ ✓
 $= 342,47 \text{ m}\cdot\text{s}^{-1}$ ✓



(3)

7.3 The speed of sound increases / time taken for the sound to travel decreases / as the temperature increases. ✓✓/Die spoed van klank neem toe / tyd geneem vir die klank om te beweeg neem af soos die temperatuur toeneem.

(2)

7.4 Echo ✓/Eggo

(1)

[10]

Pulse en Golwe Memo

November 2017/1

1.6 C✓✓

(2)

QUESTION/VRAAG 6

6.1 Superposition of pulses.✓ Algebraic sum of the amplitudes of two pulses that occupy the same space at the same time. ✓✓

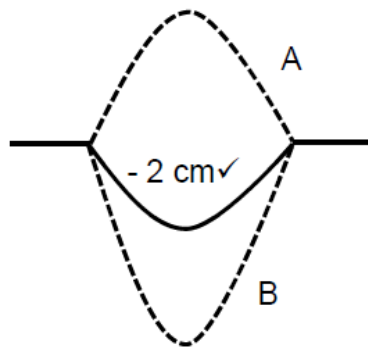
Accept: Interference of waves✓ Phenomenon where the crest of one pulse overlaps with the trough of another, resulting in a pulse of reduced amplitude. ✓✓

Superposisie van pulse.✓ Die algebraïese som van die amplitudes van twee pulse wat in dieselfde ruimte op dieselfde tyd is. ✓✓

(3)

Aanvaar: Interferensie van pulse✓ Die verskynsel waar die kruin van een puls kruis met die trog van 'n ander. Die gevolg is 'n pulse met 'n verminderde amplitude. ✓✓

6.2



(Shape/Vorm) ✓

(2)

6.3 Destructive (interference)✓ / Destruktiewe (interferensie) ✓

(1)

6.4 Amplitude = (+4) + (-6)
= 2 cm✓✓ (Accept/Aanvaar: - 2 cm)
(Marks/Punte: 2 or/of 0)

(2)

6.5 REMAINS THE SAME✓ / BLY DIESELFDE ✓

(1)

[9]

QUESTION/VRAAG 7

7.1 Sound with frequencies that are higher than what is audible to the human ear. ✓✓
Klank met frekwensies wat hoër is as wat vir die menslike oor hoorbaar is. ✓✓ (2)

7.2 $v = f \lambda$ ✓
 $1480 \checkmark = 130\,000 \lambda \checkmark$
 $\therefore \lambda = 0,011 \text{ m} \checkmark$ (4)

7.3 $\text{Speed/Spoed} = \frac{\text{distance/afstand}}{\text{time/tyd}}$ ✓
 $1\,480 \checkmark = \frac{\text{distance/afstand}}{2 \checkmark}$
 $\therefore \text{distance/afstand} = 2\,960 \text{ m} \checkmark$ (4)

7.4 • The speed of sound in air is slower ✓, as air is less dense ✓ and the particles are further apart.
Die spoed van klank in lug is stadiger ✓ as in water, omdat lug minder dig ✓ is/deeltjies is verder van mekaar af.

OR/OF

• The speed of sound in sea water is faster ✓, as sea water is denser ✓ and the particles are closer together.
Die spoed van klank in water is vinniger ✓ as lug, omdat water meer dig is ✓/ die deeltjies nader aan mekaar is. (2)

7.5 • Dolphins send out a sound frequency ✓ / *Dolfyne stuur klankgolwe uit ✓*
• The sound reflects off the prey and returns to the dolphin ✓
Die klank weerkaats vanaf die prooi terug na die dolfyn toe. ✓
• The dolphin estimates distance from prey by using time for echo to return ✓
Die dolfyn skat dan die afstand tussen sy prooi en homself deur die tyd te gebruik wat die eggo geneem het om te weerkaats. ✓ (3)

Pulse en Golwe Memo
November 2016/1

- 1.4 D ✓✓ (2)
1.5 D ✓✓ (2)
1.6 A ✓✓ (2)

QUESTION 6/VRAAG 6

- 6.1 0,4 m ✓✓ (2)
6.2.1 Trough✓
Troeg/buik (1)
6.2.2 Crest✓
Kruin (1)
6.3 A and C✓
A en C (1)
6.4 $2\frac{1}{2}$ ✓✓ (2)
6.5 $v = f \times \lambda$ ✓
 $0,4 = 0,5 \times \lambda$ ✓
 $\therefore \lambda = 0,8 \text{ m}$ ✓ (3)
6.6 $2\frac{1}{2} \times 0,8$ ✓
 $= 2 \text{ m}$ ✓

OR/OF

$$v = \frac{d}{t}$$
$$0,4 = \frac{d}{5}$$
$$= 2 \text{ m} \checkmark$$

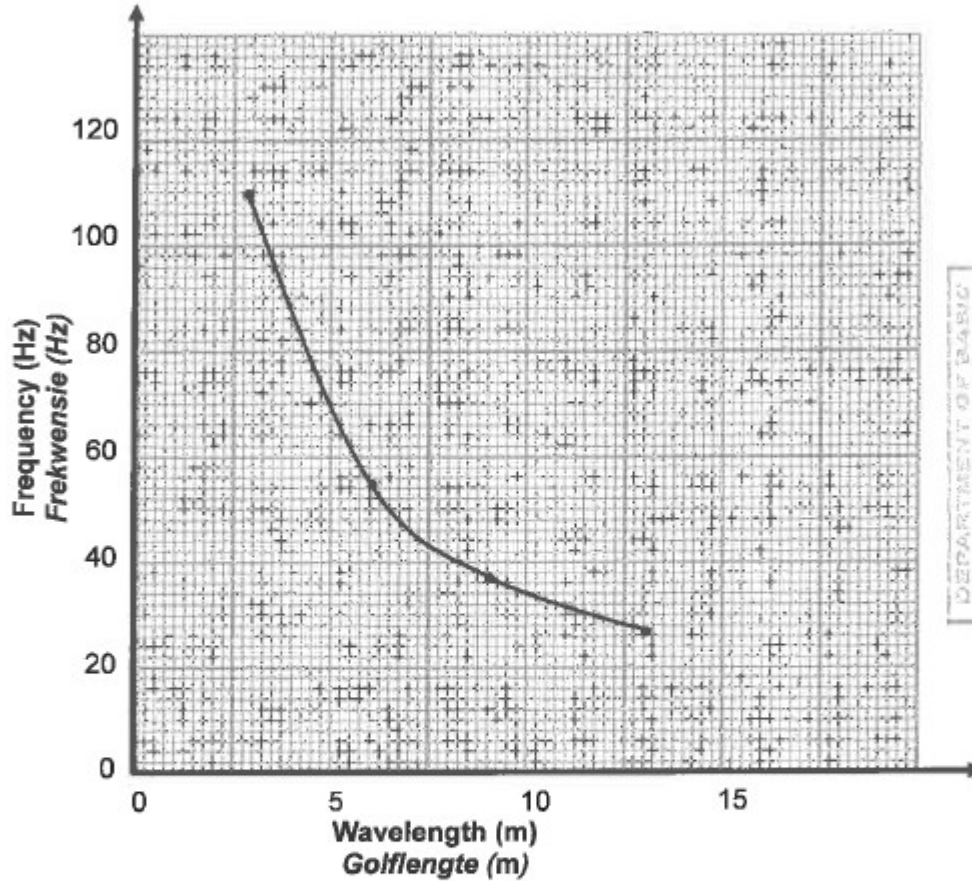
(2)
[12]

QUESTION 7/VRAAG 7

7.1 The wavelength of notes (played). ✓
Die golflengte van note (gespeel) (1)

7.2 The frequency. ✓
Die frekwensie (1)

7.3



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MARK ALLOCATION:

- ✓ correct y-axis label and unit
- ✓ correct x-axis label and unit
- ✓ all points plotted correctly
- And best fit line drawn
- ✓ shape of graph
- ✓ correct scales on axes

PUNTETOEKENNING:

- ✓ korrekte benoeming en eenheid op y-as
- ✓ korrekte benoeming en eenheid op x-as
- ✓ alle punte korrek gestip en beste lyn geteken
- ✓ vorm van grafiek
- ✓ korrekte skaal vir asse

(4)

7.4 Frequency and wavelength are inversely proportional ✓ to each other.
Frekwensie en golflengte is omgekeerd eweredig aan mekaar.

OR

$$f \propto \frac{1}{\lambda}$$

Jy
(1)

7.5 $v = f \times \lambda$ ✓
 $= 55 \times 6$ ✓
 $= 330 \text{ m} \cdot \text{s}^{-1}$ ✓

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APPROVED MARKING GUIDELINE
PUBLIC EXAMINATION

(3)
[10]

Pulse en Golwe Memo

November 2015/1

1.5 C ✓✓ (2)

1.6 A ✓✓ (2)

QUESTION 6/VRAAG 6

6.1 Transverse/*Transversale* ✓ (1)

6.2 1,5 m ✓ (1)

6.3 The distance between two consecutive points in phase ✓✓
Die afstand tussen twee opeenvolgende punte in fase

OR/OF

The distance between two consecutive crests or two consecutive troughs.
Die afstand tussen twee opeenvolgende kruine of twee opeenvolgende trôe. (2)

6.4 $\lambda = 4 \text{ m}$ ✓✓ (6 m = 1,5 waves/*golwe*) (2)

6.6 4 crests implies 3 waves
4 kruine impliseer 3 golwe
 $3 \checkmark \times 0,5 \checkmark = 1,5 \text{ s} \checkmark$ (3 waves x 0,5 seconds per wave)
(3 golwe x 0,5 sekondes per golf) (3)

<p>6.7</p> $\text{speed} = \frac{\text{distance}}{\text{time}} \checkmark$ $\text{spoed} = \frac{\text{afstand}}{\text{tyd}}$ $= \frac{6 \checkmark}{0,75 \checkmark}$ $= 8 \text{ m}\cdot\text{s}^{-1} \checkmark$	<p>Positive marking from 6.4 Positiewe nasien vanaf 6.4</p> $v = \frac{\Delta x}{\Delta t} \checkmark$ $= \frac{4 \checkmark}{0,5 \checkmark}$ $= 8 \text{ m}\cdot\text{s}^{-1} \checkmark$	$v = f \lambda \checkmark$ $= \frac{1}{T} \times \lambda$ $= \frac{1 \checkmark}{0,5} \times 4 \checkmark$ <p>OR/OF</p> $= (2 \checkmark \times 4 \checkmark)$ $= 8 \text{ m}\cdot\text{s}^{-1} \checkmark$
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(4)
[14]

Pulse en Golwe Memo

November 2015/2

QUESTION 7/VRAAG 7

- 7.1 A wave in which the particles of the medium vibrate parallel to the direction of motion of the wave. ✓✓
'n Golf waarin die deeltjies van die medium parallel aan die rigting van beweging van die golf vibreer (2)

- 7.2 **OPTION 1/OPSIE 1**
speed of sound = $\frac{\text{distance travelled}}{\text{time taken}} = \frac{2 \times \text{distance to wall}}{\text{echo time}}$ ✓
spoed van klank = $\frac{\text{afstand afgele}}{\text{tyd geneem}} = \frac{2 \times \text{afstand na muur}}{\text{eggo tyd}}$
 $\therefore 340 = \frac{2 \times 225}{\Delta t}$ ✓
Time taken/tyd geneem = 1,32 s ✓ (4)

- OPTION 2/OPSIE 2**
 $\Delta x = \frac{(v_f + v_j)\Delta t}{2}$ ✓
 $225 = \frac{(340 + 340)\Delta t}{2}$ ✓
 $\Delta t = 0,6617 \text{ s}$ ✓
Echo travels to the wall and back again / Eggo beweeg na muur en weer terug
 $\therefore \text{time/tyd} = 1,32 \text{ s}$ ✓ (4)

- 7.3 Less than/Minder as ✓
Sound travels quicker ✓ in water than in air ✓ (because water is denser).
Klank beweeg vinniger in water as in lug (omdat water digter is) (3)

NOTE: There must be a comparison.
LET WEL: Daar moet 'n vergelyking wees

- 7.4 Reflection/Weerkaatsing ✓✓ (2)

[11]