Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Waves

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Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

(a) (i) rearrangement of $f = \frac{1}{2l}\sqrt{\frac{T}{u}}$ to give $l = \frac{1}{2f}\sqrt{\frac{T}{u}}$ C1

correct subs $l = \frac{1}{2\times 92.5}\sqrt{\frac{681}{1.87\times 10^{-2}}}$ or $92.5 = \frac{1}{2f}\sqrt{\frac{681}{1.87\times 10^{-2}}}$ C1

1.0(3) (m) condone sf A1 **3**

(ii) 2 loops roughly equal B1 **1**

(iii) (lightly) stop (in centre) B1

pluck or bow B1 2

(b) keeps tension or mass per unit length constant B1

way of measuring frequency or producing vibration of known *f* B1

way of measuring length (at resonance) B1

use of suitable graph (*f vs 1/l* or *l vs 1/f)* to display results B1

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marks may be awarded for information seen on diagram

4

[10]

Q2.

(a) showed that light was a **wave** (rather than a particle)/**wave** nature (of light) **(1)**

1

(b) (i) single wavelength (or frequency) **(1)**

1

(ii) (waves/source(s) have) constant phase difference **(1)**

1

(iii) any sensible precaution, eg do not look into laser/do not point the laser at others/do not let (regular) reflections enter the eye/safety signs/suitable safety goggles **(1)**

1

(c) (0.16/8) = 0.02(0) **(1)**

$= \frac{0.020 \times 0.30(\times 10^{-3})}{10.0}$ **(1)** ecf from calculation of fringe spacing

$= 6.0 \times 10^{-7}$ m **(1)** (= 600 nm) ecf from calculation of fringe spacing

3

(d) maxima closer together **(1)**

(quotes equation and states that) spacing is proportional to wavelength/ *D* and *s* are constant therefore as λ decreases so ω decreases **(1)**

or links smaller wavelength to smaller path difference **(1)**

2

[9]

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