Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Waves (High Demand Questions)

Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

(for both fibres) increasing the wavelength of light decreases and then increases the percentage / amount of light transmitted

*accept for **1** mark:*
(for both fibres) increasing the wavelength (of light) to 5 (x 10^{-7} metres), decreases the (percentage) transmission

1

(for both fibres) the minimum transmission happens at 5 (x 10^{-7} metres)
or
maximum transmission occurs at 6.5 (x 10^{-7} metres)

*accept for a further **1** mark:*
(for both fibres) increasing the wavelength of the light from 5 (x 10^{-7} metres) increases the amount of light transmitted
increasing wavelength (of light), decreases the percentage transmitted
is insufficient on its own

1

the shorter fibre transmits a greater percentage of light (at the same wavelength)

*accept for **1** mark:*
Any statement that correctly processes data to compare the fibres

1

[3]

Q2.

(a) 10^{-15} metres to 10^{4} metres

1

(b) (i) any **one** from:

- (TV / video / DVD) remote controls
  mobile phones is insufficient
- (short range) data transmission
  accept specific example, eg linking computer peripherals
- optical fibre (signals)
  *do **not** accept Bluetooth*

1

(ii) 0.17

*an answer 17 cm gains **3** marks*
an answer given to more than 2 significant figures that rounds to

*0.17 gains **2** marks*

*allow **1** mark for correct substitution, ie $3 \times 10^8 = 1.8 \times 10^9 \times \lambda$*

3

(c) (maybe) other factors involved

accept a named 'sensible' factor, eg higher stress / sedentary lifestyle / overweight / smoking more / diet / hot office / age

not testing enough people is insufficient

unreliable data is insufficient

1

[6]

Q3.

(a) C or 0.18 mm

1

(b) 0.6 (m)

*allow **1** mark for correct substitution and/or transformation **or 1** mark for changing frequency to Hz*
*answer 600 gains **1** mark*

2

(c) creates an alternating current

accept 'ac' for alternating current
accept alternating voltage

1

with the same frequency as the radio wave

accept signal for radio wave

*accept it gets hotter for **1** mark provided no other marks scored*

1

(d) X-rays cannot penetrate the atmosphere

accept atmosphere stops X-rays

*do **not** accept atmosphere in the way*

or

X-rays are absorbed (by the atmosphere) before reaching Earth

<u>ignore</u> explanations

1

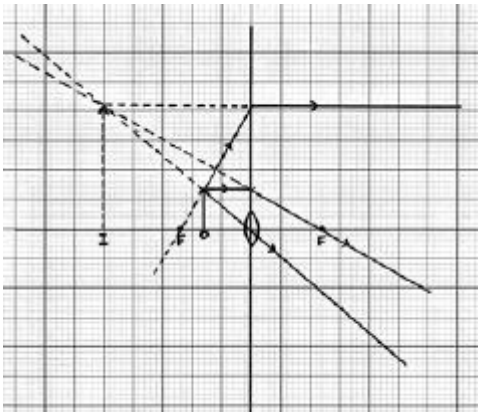
[6]

Q4.

(a) (i) **two** correct rays drawn

***1** mark for each correct ray*

- ray parallel to axis from top of object **and** refracted through focus **and** traced back beyond object
- ray through centre of lens **and** traced back beyond object
- ray joining top of object to focus on left of lens taken to the lens refracted parallel to axis **and** traced back parallel to axis beyond object



2

an arrow showing the position **and** correct orientation of the image for their rays

*to gain this mark, the arrow must go from the intersection of the traced-back rays to the axis **and** the image must be on the same side of the lens as the object and above the axis*

1

(ii) (x) 3.0

accept 3.0 to 3.5 inclusive

or

$$\frac{\text{their image height}}{\text{object height}}$$

correctly calculated

*allow **1** mark for correct substitution into equation using their figures*

ignore any units

2

(b) any **two** from:

in a camera the image is:

- real not virtual
- inverted and not upright

  accept upside down for inverted
- diminished and not magnified

  accept smaller and bigger
  accept converse answers but it must be clear the direction of the comparison
  both parts of each marking point are required

2

[7]