

# P5 Revision Questions

## Part 2

# Question 1 .... of 50

- How can microwaves be used to communicate?

# Answer 1 .... of 50

- Sent from transmitter, received and amplified by satellite in space, re-transmitted back to earth and picked up by a receiver

## Question 2 .... of 50

- How do these different frequencies behave in the atmosphere i) 30MHz ii) Between 30MHz-30GHz iii) 30GHz

# Answer 2 .... of 50

- i) Reflected by ionosphere ii) Can pass through atmosphere iii) Absorbed and scattered by atmosphere

# Question 3 .... of 50

- Why does some of the signal get lost as it travels through the atmosphere?

# Answer 3 .... of 50

- Gets scattered and absorbed

# Question 4 .... of 50

- Why do radio waves have a long range?

# Answer 4 .... of 50

- They can be diffracted easily

# Question 5 .... of 50

- What 2 things affect the amount of diffraction of a wave and when does diffraction happen best?

# Answer 5 .... of 50

- Size of the gap and frequency. Happens best when the gap is the same size or smaller than the wavelength

# Question 6 .... of 50

- Why do the receiving and transmitting satellite dishes need to be carefully aligned?

# Answer 6 .... of 50

- Dish is small compared to wavelength, microwaves do not diffract much,

# Question 7 .... of 50

- What is wave interference?

# Answer 7 .... of 50

- The effect resulting from when two waves overlap

# Question 8 .... of 50

- What is constructive and destructive interference?

# Answer 8 .... of 50

- Where the waves meet and add together.  
Where the waves meet and subtract from  
each other

# Question 9 .... of 50

- What evidence do we have that light travels in straight lines?

# Answer 9 .... of 50

- Shadows, eclipses

# Question 10 .... of 50

- What does it mean when waves are 'in phase'?

# Answer 10 .... of 50

- The troughs and crests meet/ are alligned

# Question 11 .... of 50

- What evidence is there for light being a particle and what evidence is there for it being a wave?

# Answer 11 .... of 50

- Reflection for particles. Interference and polarisation for waves

# Question 12 .... of 50

- How could you diffract a wave?

# Answer 12 .... of 50

- Either have 2 coherent sources or one source going through 2 slits

# Question 13 .... of 50

- What is light thought to be, a particle or a wave? Why?

# Answer 13 .... of 50

- Wave- more evidence for it (particles cannot interfere or diffract)

# Question 14 .... of 50

- What are the 3 conditions needed for interference to happen?

# Answer 14 .... of 50

- Waves are the same frequency, amplitude and are in phase. (They are coherent)

# Question 15 .... of 50

- Describe an experiment to show how light interferes. What should you notice?

# Answer 15 .... of 50

- Monochromatic light shone through 2 slits. The pattern produced on a screen has light and dark fringes

# Question 16 .... of 50

- Describe an experiment to show how sound waves interfere. What should you notice?

# Answer 16 .... of 50

- 2 coherent speakers, place next to each other.  
When you walk in front of them there are  
loud and quiet spots due to con and des  
interference

# Question 17 .... of 50

- Describe an experiment to show how water waves interfere. What should you notice?

# Answer 17 .... of 50

- 2 objects bobbing up and down in water at the same frequency- waves produced at the side of the tank

# Question 18 .... of 50

- State 3 properties of electromagnetic waves?

# Answer 18 .... of 50

- All travel at the same speed, are transverse waves, can travel through a vacuum

# Question 19 .... of 50

- What can cause light to 'bend'?

# Answer 19 .... of 50

- Large gravity/ mass

# Question 20 .... of 50

- Who thought light was a wave and who thought light was a particle?

# Answer 20 .... of 50

- Newton = Particle.
- Huygens = Wave

# Question 21 .... of 50

- What is an interference pattern?

# Answer 21 .... of 50

- A pattern produced by coherent waves interfering. You will have points made that have high and low amplitude caused by constructive and destructive interference respectively

# Question 22 .... of 50

- What is polarisation? Give 2 uses of it

# Answer 22 .... of 50

- When light is confined to only move in one plane. Reduces light reflecting off road getting through car windows and sunglasses

# Question 23 .... of 50

- What type of wave can be polarised?

# Answer 23 .... of 50

- Light/ transverse

# Question 24 .... of 50

- What is refraction? Why does it happen?

# Answer 24 .... of 50

- Where a wave changes direction due to passing from one medium into another. This changes the speed of the speed of the waves at different parts

# Question 25 .... of 50

- What is the order of the colour spectrum?  
Which colour has the longest wavelength?

# Answer 25 .... of 50

- Red Orange Yellow Green Blue Indigo Violet  
ROY G BIV. Red has longest wavelength

# Question 26 .... of 50

- What is dispersion? Why does it happen?

# Answer 26 .... of 50

- The splitting of light into its different wavelengths/ colours. Due to the wavelengths having different refractive indexes

# Question 27 .... of 50

- What is total internal reflection?

# Answer 27 .... of 50

- Complete reflection of a light ray in glass when the ray hits the glass/ air boundary. This happens above the critical angle.

# Question 28 .... of 50

- In refraction, when the wave speed decreases, which direction does the wave move?

# Answer 28 .... of 50

- Towards the normal

# Question 29 .... of 50

- In refraction, when the wave speed increases, which direction does the wave move?

# Answer 29 .... of 50

- Away from the normal

# Question 30 .... of 50

- In which objects does light travel the slowest  
in

# Answer 30 .... of 50

- Denser

# Question 31 .... of 50

- What is meant by the refractive index?

# Answer 31 .... of 50

- A measure of the amount of bending after a boundary

# Question 32 .... of 50

- What happens to the amount of refraction if you increase the refractive index?

# Answer 32 .... of 50

- It increases

# Question 33 .... of 50

- Explain how dispersion happens

# Answer 33 .... of 50

- Different colours have different frequencies- and so have different refractive indices. So they bend by different amounts

# Question 34 .... of 50

- What happens to light when it meets a boundary at an angle i) less than ii) more than the critical angle

# Answer 34 .... of 50

- Less than- some refracts and some reflects.  
Above- Total internal reflection

# Question 35 .... of 50

- Give 3 examples of total internal reflection

# Answer 35 .... of 50

- Fibre optics, binoculars, reflectors and cats eyes

# Question 36 .... of 50

- Which colour has the greatest refractive index?

# Answer 36 .... of 50

- Blue

# Question 37 .... of 50

- What happens to the critical angle if you have a material with a high refractive index?

# Answer 37 .... of 50

- It is high

# Question 38 .... of 50

- What is a convex lens?

# Answer 38 .... of 50

- Piece of glass that is thick in the middle and is thinner around the outside

# Question 39 .... of 50

- Name 3 ways that convex lenses are used

# Answer 39 .... of 50

- Cameras, spectacles, projectors and magnifying glasses

# Question 40 .... of 50

- What is the focal length of a lens?

# Answer 40 .... of 50

- The distance from the optical centre of a lens to its focus

# Question 41 .... of 50

- What is the focal point of a lens?

# Answer 41 .... of 50

- The point where all light is focussed on (or diverges to)

# Question 42 .... of 50

- What happens to light incident on a convex lens?

# Answer 42 .... of 50

- It will focus it/ refract it

# Question 43 .... of 50

- What is meant by a real image?

# Answer 43 .... of 50

- An image that can be projected onto a screen  
(light actually passes through it)

# Question 44 .... of 50

- What happens to the focal length of a lens the fatter it gets?

# Answer 44 .... of 50

- It decreases (as the lens is more powerful)

# Question 45 .... of 50

- What type of images do convex lenses produce?

# Answer 45 .... of 50

- Real images

# Question 46 .... of 50

- What is the optical centre of a lens?

# Answer 46 .... of 50

- The point of the lens where light will go straight through it (usually the actual centre of the convex lens)

# Question 47 .... of 50

- What does a convex lens do to light coming from the focal point?

# Answer 47 .... of 50

- It comes out of the lens as a parallel beam

# Question 48 .... of 50

- What is the magnification of a lens?

# Answer 48 .... of 50

- The ratio of the height of the image to the height of the object

# Question 49 .... of 50

- What happens to the size of the image formed if you decrease the distance of the lens from the object?

# Answer 49 .... of 50

- It increases

# Question 50 .... of 50

- What is an virtual image?

# Answer 50 .... of 50

- An image formed on the same side of the lens as the object