Year 11 Revision: Waves and Light

QUESTIONS:

1. Compare period, frequency and wavelength.

2. Use diagrams to compare a transverse wave with a longitudinal wave.

3. Which property of a sound wave defines pitch? Which one defines volume?

4. Calculate the period of a particle vibrating 1.54×10^7 times every second.

5. Calculate the frequency of a wave with a period of 0.023 seconds.

6. Calculate the wavelength of waves travelling through a spring at 16.2 ms^{-1} if the frequency of the waves is 0.354 Hz.

7. Calculate the speed of a sound wave if it has a wavelength of 170 m and a period of 0.500 s.

8. Describe how a standing wave is produced.

9. Explain how and why the Doppler effect occurs.

10. Two waves with equal amplitude are travelling through the same medium. One wave has a wavelength of 5 m and the other a wavelength of 1 m. Which wave has more energy?

11. Both a mirror and a piece of paper reflect all the colours of visible light, yet paper looks white while a mirror shows each of the individual colours shone on it. Explain.

12. State the relationship between an incident ray and its reflected ray.

13. State Snell's Law

14. Calculate the angle of refraction for a ray of light passing from water (refractive index 1.33) to glass (refractive index 1.54) if the angle of incidence is 32.0°

15. Calculate the refractive index of a clear plastic if light shone into air (refractive index 1.003) from it has an angle of incidence of 45.21° and an angle of refraction 22.30°

16. The lighting in some shops is not perfectly white but slightly yellow. Explain how this can make the colour of clothes look different in the shop than they do outside in the sun.

17. What colour will a white page look if it is illuminated by red and green light at the same time? What colour would a blue page look in the same situation?