Test 14: Waves 2 – Wave effects and Wave properties

KNOW			
Q	**Answers**	**Marks**	**Syllabus**
01-05	B; B; D; C; C	5	3.4.3
06-10	A; D; B; B; D	5	3.4.4
APPLY			
Q	**Answers**	**Marks**	**Syllabus**
11	Electromagnetic radiation with higher frequency has a greater impact on living cells **[1]**. If the frequency is high enough, it can cause ionisation and mutations within cells. Lower frequency radiation can be tolerated by the cells in higher doses without sustaining damage **[1]**.	2	3.4.3
12	a. Microphones turn sound waves into electrical signals whilst loudspeakers do the reverse.	1	3.4.3
	b. Sound waves hit a thin diaphragm inside the microphone and make it vibrate. The diaphragm is attached to a coil of wire that is around a permanent magnet **[1]**. As the coil vibrates it creates a current in the wire **[1]**.	2	
13	State your position: the particles in a substance vibrate backwards and forwards with a sound wave but do not travel in the direction of the wave **[1]**. Cite some evidence and explain how it supports your opinion: sound travels more quickly through solids than through liquids or gases because the particles are more densely packed **[1]**. If the particles of solid were to move with a sound wave the solid would have to flow (in other words, become a liquid) **[1]**.	3	3.4.4 **Enquiry process: 2.8**
14	The wave is partially absorbed by the tunnel walls and partially reflected back **[1]**. The reflected wave would have the same frequency and wavelength as the original but smaller amplitude **[1]**.	2	3.4.4
EXTEND			
Q	**Answers**	**Marks**	**Syllabus**
15	a. Wave power does not produce pollution or waste products.	1	3.4.3
	b. The chart shows a disparity between the amount of power available, depending on local conditions. Wave power could, therefore, only be harvested efficiently in certain locations.	1	**Enquiry process: 2.1**
16	a. Light waves are transverse waves. Sound waves are longitudinal (or pressure) waves.	1	3.4.4
	b.i. A light wave doesn't need a medium but if it is being transmitted by a medium the particles will vibrate in a plane perpendicular to the direction of the wave. b.ii. A sound wave needs a medium and the particles will vibrate in a plane parallel to the direction of the wave.	2	