

Name of the Student: _____

Max. Marks : 23 Marks

Time : 23 Minutes

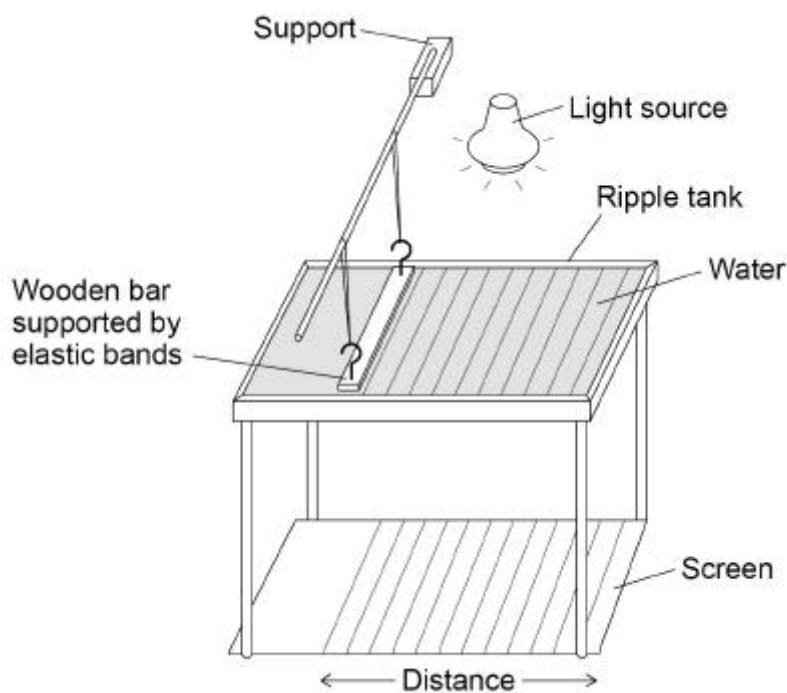
Q1.

Figure 1 below shows the equipment a teacher used to determine the speed of a water wave.

The equipment includes:

- a ripple tank filled with water
- a wooden bar that creates ripples on the surface of the water
- a light source which causes a shadow of the ripples on the screen.

Figure 1



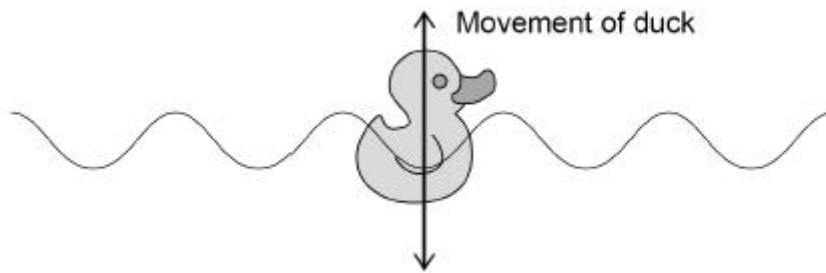
(a) Describe how equipment in **Figure 1** can be used to measure the wavelength, frequency and speed of a water wave.

(6)

The teacher put a plastic duck in the ripple tank as shown in **Figure 2**.

The plastic duck moved up and down as the waves in the water passed.

Figure 2



- (b) How does the movement of the plastic duck in **Figure 2** demonstrate that water waves are transverse?

(1)

- (c) The teacher measured the maximum height and the minimum height of the plastic duck above the screen as the wave passed.

The teacher repeated his measurements.

The table shows the teacher's measurements.

Maximum height in mm	509	513	511
Minimum height in mm	503	498	499

Calculate the mean amplitude of the water wave.

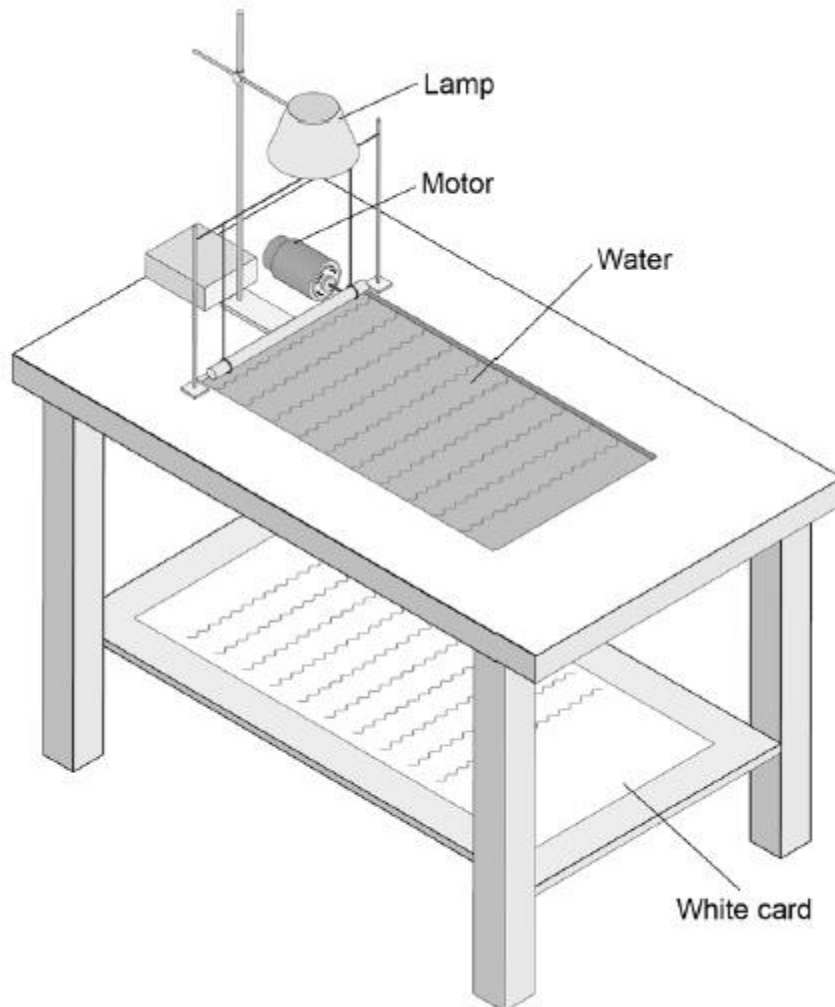
Mean amplitude = _____ mm

(3)

(Total 10 marks)

Q2.

The diagram shows a ripple tank.



- (a) The motor makes a noise when it is turned on.

Describe the differences between the properties of the sound waves produced by the motor and the water waves in the ripple tank.

(4)

(b) The period of the sound waves produced by the motor is 8.3 milliseconds.

Calculate the frequency of the sound waves.

Use the Physics Equations Sheet.

Frequency = _____ Hz

(3)

(c) Explain how a student could make appropriate measurements and use them to determine the wavelength of the waves in the ripple tank.

(6)
(Total 13 marks)