7 An arrangement that is used to demonstrate interference with waves on the surface of water is shown in Fig. 7.1.

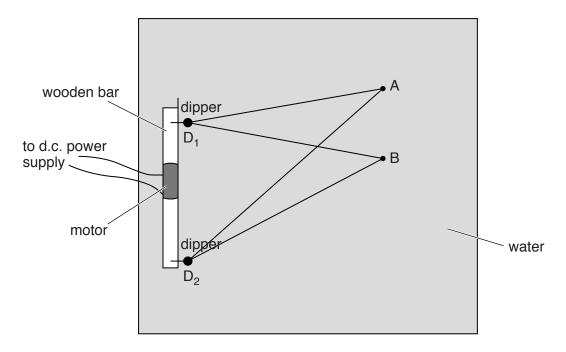


Fig. 7.1 (view from above)

(a) Two dippers D<sub>1</sub> and D<sub>2</sub> are connected to a motor and a d.c. power supply. Initially only D<sub>1</sub> vibrates on the water surface to produce waves.
The variation with distance x from D<sub>1</sub> of the displacement y of the water at one instant of time

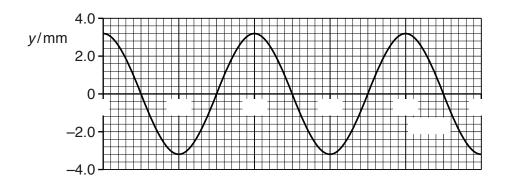


Fig. 7.2

Using Fig. 7.2, determine

is shown in Fig. 7.2.

(i) the amplitude of the wave,

amplitude = ..... mm [1]

(ii) the wavelength of the wave.

wavelength = ..... mm [1]

(ii) State and explain whether these waves are stationary or progressive.  (iii) Explain why D <sub>1</sub> and D <sub>2</sub> are connected to the same motor.  (iii) Explain why D <sub>1</sub> and D <sub>2</sub> are connected to the same motor.  (iv) The points A and B on Fig. 7.1 are at the distances from D <sub>1</sub> and D <sub>2</sub> shown in Fig. 7.3    D <sub>1</sub> A   D <sub>2</sub> A   D <sub>1</sub> B   D <sub>2</sub> B     5.0 cm   7.0 cm   5.0 cm   6.0 cm     Fig. 7.3    State and explain the variation with time of the displacement of the water on the surface (i) A, (ii) B.			surface.		israto ana wave	o are preduces	d by both dippers o
(ii) Explain why D <sub>1</sub> and D <sub>2</sub> are connected to the same motor.  The points A and B on Fig. 7.1 are at the distances from D <sub>1</sub> and D <sub>2</sub> shown in Fig. 7.3  D <sub>1</sub> A D <sub>2</sub> A D <sub>1</sub> B D <sub>2</sub> B  5.0 cm 7.0 cm 5.0 cm 6.0 cm  Fig. 7.3  State and explain the variation with time of the displacement of the water on the surface.	(i)	State	and explain wh	ether these wav	es are stationary	y or progressive	э.
The points A and B on Fig. 7.1 are at the distances from D <sub>1</sub> and D <sub>2</sub> shown in Fig. 7.3    D <sub>1</sub> A   D <sub>2</sub> A   D <sub>1</sub> B   D <sub>2</sub> B     5.0 cm   7.0 cm   5.0 cm   6.0 cm     Fig. 7.3  State and explain the variation with time of the displacement of the water on the surface (i) A,							[
The points A and B on Fig. 7.1 are at the distances from D <sub>1</sub> and D <sub>2</sub> shown in Fig. 7.3    D <sub>1</sub> A   D <sub>2</sub> A   D <sub>1</sub> B   D <sub>2</sub> B     5.0 cm   7.0 cm   5.0 cm   6.0 cm     Fig. 7.3  State and explain the variation with time of the displacement of the water on the surface (i) A,	(ii)	Expla	ain why D <sub>1</sub> and [	O <sub>2</sub> are connected	d to the same m	otor.	
D <sub>1</sub> A D <sub>2</sub> A D <sub>1</sub> B D <sub>2</sub> B 5.0 cm 7.0 cm 5.0 cm 6.0 cm  Fig. 7.3  State and explain the variation with time of the displacement of the water on the surface (i) A,							[
5.0 cm 7.0 cm 5.0 cm 6.0 cm  Fig. 7.3  State and explain the variation with time of the displacement of the water on the surface	The	e points	s A and B on Fig	g. 7.1 are at the	distances from D	D <sub>1</sub> and D <sub>2</sub> show	n in Fig. 7.3.
Fig. 7.3  State and explain the variation with time of the displacement of the water on the surface			D <sub>1</sub> A	$D_2A$	D <sub>1</sub> B	D <sub>2</sub> B	
State and explain the variation with time of the displacement of the water on the surface.			5.0 cm	7.0 cm	5.0 cm	6.0 cm	
State and explain the variation with time of the displacement of the water on the surface.				Fig	7.3		
			explain the vari	ation with time o	f the displaceme	ent of the water	r on the surface at
(ii) B.							[
	(ii)	B.					
							[