

I. Answer all the questions

Time : 01:15:00 Hrs

Total Marks : 35

5 x 1 = 5

Part-A

- 1) The principle on which a stethoscope works is _____.
(a) reflection (b) multiple reflection
- 2) Wave velocity= frequency X _____.
(a) amplitude (b) time period (c) wavelength
- 3) The sensation of sound persists in the human brain for about _____ of a second.
(a) 1/100th (b) 1/1000th (c) 1/10th
- 4) The SI unit of amplitude is _____.
(a) hertz (b) metre (c) second
- 5) A sound wave is travelling from East – West in air. The air molecules move along in the _____ direction.
(a) North – south (b) East – west (c) East – south

Part-B

5 x 1 = 5

- 6) Match the following

ripples on the surface of water	longitudinal waves
light waves	hertz
sound waves	electromagnetic transverse waves
frequency	metre
wavelength	mechanical transverse

- 7) From the following instruments pick the odd one out on the basis of how sound is produced.



Mouth organ



Veena



Flute



Clarinet

- 8) Study the type of waves shown in the diagrams below and select the one that represents how sound is propagated through air.

Vibrating
tuning fork



Wave
propagation



Vibrating
tuning fork

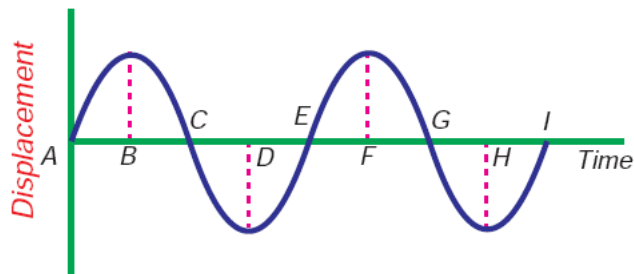


Wave
propagation



9) From the graph given below, express the distance travelled and the time taken by the wave between the following points in terms of 'l' and 'T' respectively.

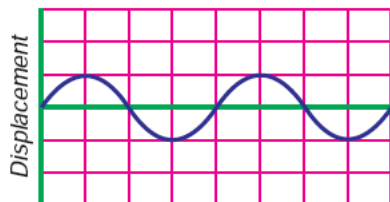
- Between A and E
- Between C and E
- Between B and F
- Between D and E
- Between E and H



10) a. Out of the following waveforms, which has the highest

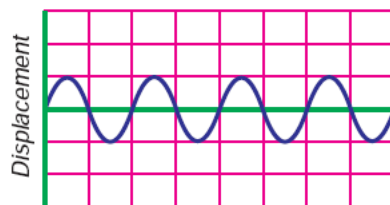
- wavelength (ii) frequency (iii) amplitude (iv) pitch

b. Give reason for your answer.



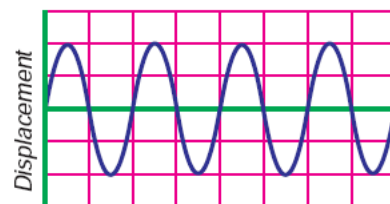
Distance

(a)



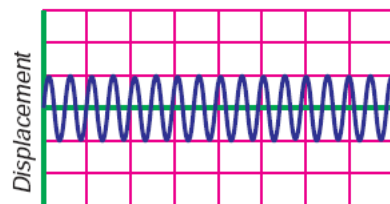
Distance

(b)



Distance

(c)



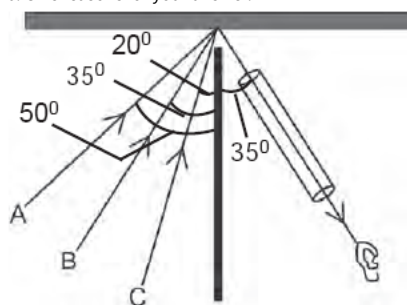
Distance

(d)

Part-C

5 x 2 = 10

- 11) a. In which of the given positions A, B or C, should an alarm clock be placed, so that the maximum sound can be heard by the observer?
b. Give reasons for your answer.



- 12) Why do we see the lightning a few seconds before we hear the thunder?
13) Can we hear the explosions that take place on the surface of the moon? Why?
14) The time interval between a lightning flash and the first sound of thunder was found to be 5 s. If the speed of sound in air is 330 ms^{-1} , find the distance of the flash from the observer.
15) Mention the type of waves produced in the air and the wire when the wire of a guitar is plucked. Support your answer with a suitable reason.

Part-D

5 x 3 = 15

- 16) How do bats locate their prey? Explain in detail.
17) "Sound waves cannot pass through vacuum or empty space". Describe an experiment to illustrate the above statement.
18) A disturbance is created on the surface of water, which has a small cork floating on the surface.
Describe the motion of the cork.
Name the kind of wave produced in water.
Is it possible to have the same kind of wave in air?
19) Explain how the speed of a vehicle is measured by a traffic control vehicle.
20) A boat is fitted with an echo-sounder, which uses ultrasound with a frequency 40 KHz.
What is the frequency of the ultrasound Hz?
If ultra sound pulses take 0.03s to travel from the boat to seabed and return, how deep is the water under the boat.
What is the wavelength of ultrasound in water?
