

MDCAT Physics Chapter 4 Waves Online Test

Sr	Questions	Answers Choice
1	A progressive sound wave is a means of transferring energy. A progressive sound wave of constant frequency is generated in air. The intensity of energy transfer is directly proportional to another of the wave parameters. Which of the following is correct?	<p>A. $\intensity \propto (\text{amplitude})^2$</p> <p>B. $\intensity \propto (\text{frequency})^2$</p> <p>C. $\intensity \propto (\text{wavelength})^2$</p> <p>D. $\intensity \propto (\text{speed})^2$</p>
2	The frequency of the fundamental mode of open at one organ pipe is 400 Hz. If one end of pipe is closed the fundamental frequency will be	<p>A. 800 Hz</p> <p>B. 600 Hz</p> <p>C. 400 Hz</p> <p>D. 200 Hz</p>
3	The frequency of an open pipe is f. if one end is closed then its fundamental frequency will be:	<p>A. $f/2$</p> <p>B. $3f/4$</p> <p>C. f</p> <p>D. 2f</p>
4	An organ pipe open at both ends and another organ pipe, closed at one end will resonate with each other, if their lengths are in ratio of	<p>A. 1:1</p> <p>B. 1:4</p> <p>C. 2:1</p> <p>D. 1:2</p>
5	A church organ consist of open ended pipes ranging from 4m to 4 mm, if the speed of sound is considered as 400 m/s then the min and max frequency is:	<p>A. 400 Hz and 4 kHz</p> <p>B. 100 Hz and 100 kHz</p> <p>C. 50 Hz and 50 kHz</p> <p>D. 400 Hz and 400 kHz</p>
6	The wavelength of light observed on the earth, from a moving star is found to decrease by 0.05%. Relative to the earth the star is	<p>A. moving away with a velocity of 1.5×10^5 m/s</p> <p>B. moving away with a velocity of 1.5×10^4 m/s</p> <p>C. coming closer with a velocity of 1.5×10^5 m/s</p> <p>D. coming closer with a velocity of 1.5×10^4 m/s</p>
7	In a closed organ pipe, the fundamental frequency is f. What will be the ratio of the frequencies of the next three overtones?	<p>A. 2 : 3 : 4</p> <p>B. 3 : 7 : 11</p> <p>C. 3 : 4 : 5</p> <p>D. 3 : 5 : 7</p>
8	A wave which consists of a single, non-repetitive disturbance is called a	<p>A. Continuous wave</p> <p>B. Longitudinal wave</p> <p>C. Pulse</p> <p>D. Transverse wave</p>
9	A closed organ pipe and an open organ pipe have their first overtone identical in frequency. Their lengths are in ratio	<p>A. 3:4</p> <p>B. 1:2</p> <p>C. 2:3</p> <p>D. 3:5</p>
10	A particular wavelength received from a galaxy is measured on earth and is found to be 5% more than that its wave length on earth. Hence galaxy is	<p>A. Moving towards earth</p> <p>B. Going away from earth</p> <p>C. Stationary with respect to earth</p> <p>D. None</p>
11	If source and observer are moving towards each other with same speed and after crossing they are receding each other then frequency observed by observer:	<p>A. Decreases</p> <p>B. Remains constant</p> <p>C. Increases</p> <p>D. First Increases then decreases</p>
12	A 4 m long string fixed at its ends resonate in 4 segments. The wavelength of the wave is:	<p>A. 4m</p> <p>B. 0.5m</p> <p>C. 2m</p> <p>D. 0.25 m</p>
13	Which one is the case when the wavelength is actually changed?	<p>A. When source move relative to observer</p> <p>B. When observer move relative to source</p> <p>C. When observer moves around a stationary source at the center of</p>

		circle D. When the relative displacement between source and observer is zero
14	A stationary wave is established in a string which vibrates in four segments at a frequency of 120 Hz. Its fundamental frequency is:	A. 15Hz B. 60Hz C. 30Hz D. 430Hz
15	It is a common characteristic of all types of wave motion that	A. Particles move up and down B. Particles move back and forth C. Energy is transferred without the transport of particles D. A material medium transmits the disturbance
16	The spectrum of a star's light is measured and the wavelength of one of the lines as the sodium's line is found to be 589 nm. The same line has the wavelength of 497 nm when observed in the laboratory. This means the star is	A. Moving away from the earth B. Moving towards the earth C. Stationary D. Revolving around the planet
17	A sonometer wire 100 cm in length has a fundamental frequency of 330 Hz. The velocity of propagation of waves along the wire is	A. 115m/sec B. 115m/sec C. 660m/sec D. 990m/sec
18	In closed end organ pipe, the frequency of first harmonic is 300 Hz. The frequency of third overtone is :	A. 900 Hz B. 1500 Hz C. 2100 Hz D. 600 Hz
19	With the propagation of longitudinal waves through a material medium, the quantities transferred in the direction of propagation are:	A. Energy, momentum and mass B. Energy and momentum C. Energy and mass D. Energy
20	When an observer moves towards a stationary source with a speed equal to 1/5 times of speed of sound, the percentage increase in the frequency of sound is:	A. 20% B. 40% C. 5% D. 10%
21	If the tension in a string stretched between two fixed points is made four times, the frequency of the fundamental harmonic will become:	A. Two times B. Three times C. Four times D. Six times
22	Bats navigate and find food by:	A. Ultrasonic B. Echolocation C. Refraction
23	The maximum wavelength of a transverse wave that can be set up in a string of length L is	A. L B. 2L C. $\frac{L}{2}$ D. 4L
24	If a transverse wave has a speed of 10 m/ sec and frequency of 10 cycle/ sec its wavelength is:	A. 1 m B. 10^{-2} cm C. 10 m D. 10 cm
25	The fundamental frequency of a closed organ pipe is 50 Hz. The frequency of second overtone is	A. 100Hz B. 150Hz C. 60Hz D. 250Hz
26	A longitudinal sinusoidal wave has wavelength of 1cm and a period of 2sec. Its wave velocity is:	A. 50 cm/ sec B. 0.5 cm/ sec C. 5 m/ s D. 0.005 m/ sec
27	A closed organ pipe and an open organ pipe have their first overtones of identical frequency. Their respective lengths are in the ratio:	A. 1 : 2 B. 4 : 3 C. 2 : 3 D. 3 : 5
28	Where in standing wave, do the vibrations of the medium occur?	A. Only at the nodes B. Only at the antinodes C. At all points between the nodes D. At all points between the antinodes
29	Wavelength of the wave is the distance between the particles of the medium having a difference of:	A. Zero B. $\frac{\pi}{2}$ C. 2π D. $\frac{\pi}{4}$
30	When a wave passes from medium to another, deviate from its path is called	A. reflection B. refraction C. diffraction D. transmission

31	A sonar depth finder in a boat uses sound signals to determine the depth of water. Four seconds after the sound leaves the boat it returns to the boat because of reflection from the bottom. Assume the speed of sound in water is 1,460 meters per second. The depth of the water is, in meters, :	A. 2,200 B. 4,800 C. 4,400 D. 2,920
32	The fundamental frequency in a stretched string is 10 Hz. To double the frequency, the tension in it must be changed to:	A. $T_2 = 2T_1$ B. $T_2 = 4T_1$ C. $T_2 = T_1$ D. none of these
33	A listener observes the frequency "f" of stationary source. If it move toward with 3 times of velocity of sound. Then the apparent frequency of the sound will be	A. f B. 3f C. f/2 D. 4f
34	A string vibrates in 1 loop has frequency 25 Hz if it moves in 2 loops its frequency would be:	A. 25 Hz B. 50 Hz C. 12.5 Hz D. 5Hz
35	In which of the following, Doppler's effect is not applicable?	A. To find speed of satellite B. To find objects under water C. To find speed of star D. To tune a musical instrument
36	A whistle is revolved with high speed in a horizontal circle of radius R. to an observer at the centre of the circle the frequency of the whistle will appear to be:	A. Decreasing B. Increasing C. Both D. Constant
37	When temperature increases, frequency of organ pipe:	A. Decreases B. Remains the same C. Increases D. Becomes zero