Grade 11 | Science | **Unit : 04 – Waves and their applications**

MCQ Questions

1) Not an example for a wave in which the particles of the medium vibrate perpendicular direction of the wave is,

i) Water wave ii) Tsunami wave

iii) Sound wave iv) Surface wave of earthquake wave

2) Four adverse effects of the change in the atmosphere are given below.

A - Increase in the temperature of the ocean.

B - Melting ice at poles of the arth.

C - Cause skin cancers.

D - Reduce photosynthesis of plants.

Out of the above statements which are the results of ultra violet rays.

i) A ii) B iii) C iv) D

3) In which response do you get the sequence in the increasing order of frequency of vibration the electro – magnetic waves of the ultraviolet rays, X rays, visible light and infra red rays.

i) Infra red rays, visible light, ultraviolet rays, X rays

ii) X – rays, visible light, ultraviolet rays, Infra red rays

iii) ultraviolet rays, visible light, Infra red rays, X – rays

iv) visible light, Infra red rays, ultraviolet rays, X – rays

4) Correct statements regarding the mechanical waves are

A → they are formed as a result of mechanical vibration in a medium.

B → they do not need a medium to propagate.

C → Sound waves are a type of mechanical wave.

i) A & B ii) B & C iii) A & C iv) A, B & C

5) String instruments make sound by vibrating the string. This is not a factor which affect on the pitch of string instrument.

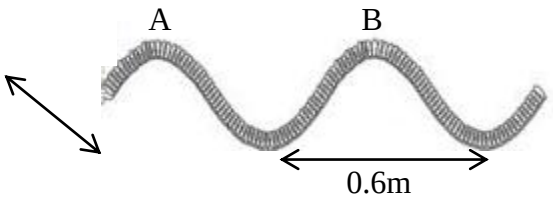
i) The thickness of the string.

ii) The vibrating length of the string.

iii) The amount streched

iv) The force exerted on the string.

6) The diagram show part of a spring that is shaken from side to side to produce a wave.



The distance between two successive peaks is 0.6 m and the frequency is 2.5 Hz. How long does it take for a wave to travel 3.0 cm along the spring.

i) 0.20 s ii) 0.50 s iii) 2.0 s iv) 5.0 s

7) Electro – magnetic waves are used for radio – transmission. The range of transmission frequency of FM radio channels is,

i) 88 MHz - 108 GHz ii) 30 MH_2 - 4 GHz

iii) 88 MHz - 108 GHz iv) 20 MHz – 20 000 Hz

8) Wrong statement about the radio wave is

i) a type of electromagnetic wave.
ii) need a gaseous medium for the propagation.
iii) Travel at a velocity of light rays.
iv) Wave length depends on the frequency.

9) Which of the quantity of a wave will change when changing the amplitude of a wave?

i) Loudness ii) Pitch iii) Quality of sound iv) Frequency

10) Which quantity is measured by meters (m) among following?

i) Wave length ii) Frequency iii) Period iv) Velocity of the wave

Structured Essay Questions.

1) Man use different types of wave. Energy can be transmitted by waves.

i) Name the two types of waves according to the movement of particles of the medium in relative to the direction of the waves.

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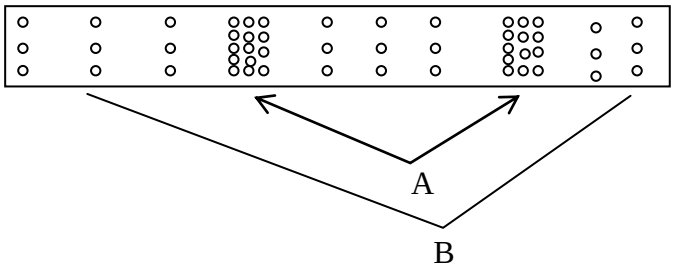
ii) Arrangement of particles of a sound wave is shown in the diagram.



a) Write the relationship between the direction of vibration of particles and the direction of energy transmission.

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b) Name an example for above type of wave.

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c) Name A and B.

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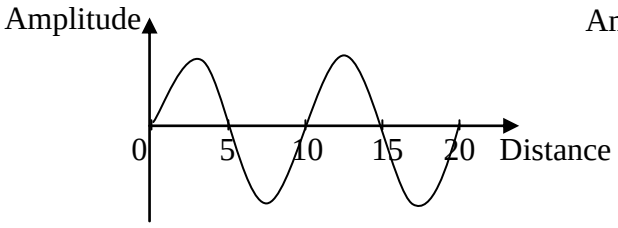
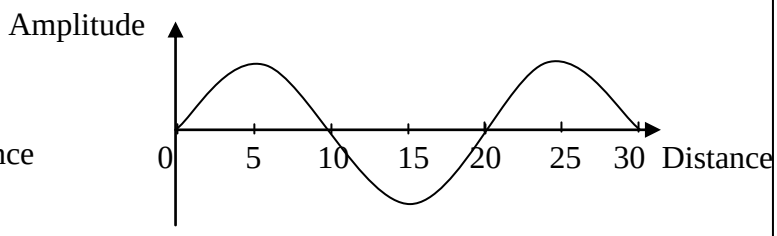
2) Given below are two waves x and y produced by vibrating membrane in a percussion instrument in two occations. They are drawn to the same scale.



(P)



(Q)

i) To which wave type do these mechanical waves produced in the membrane belong?

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ii) Of the waves x and y, which produces a sound of higher pitch.

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iii) Of the waves x and y, which produces a sound of higher loudness?

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iv) Express the relationship of the velocity of a sound (v), wave length (λ) and frequency of a sound (f) using an equation.

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v) Calculate the frequency of the sound wave(P) if the velocity of the sound wave is 340 ms^{-1}

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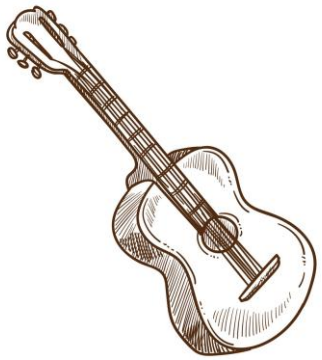
Essay Questions.

1) A) In a guitar there is a box with a cavity made of wood called the sound box and played by the vibrating stretched string.



i) Mention the device which is in the guitar, to increase the volume of the sound that produces by the string.

ii) When the string is plucked hard, the producing sound will be increased. Explain.

iii) Explain why various types of wires are used in guitars.

iv) What is tuning?

v) How can the sound of different notes produced in a guitar, without changing the length of a wire.

vi) The sound energy of the guitar travels to our ear as waves. Mention the nature of the wave.

B) A "dawula" is tuned by pulling the strings attached to the edge of its frame.

i) Name two instruments which emitted sound by vibrating membranes.

ii) When tightening the ropes attached to the membrane of "dawula" what change takes place in the membrane.

C) The sun is the main energy source of the earth.

i) Sunlight is a mexture of seven colours. Name those colours accordingly.

ii) Which colour in visible ligth has the highest deviation among other colours.

2) Electromagnetic waves do not need a medium for propagation.

A) i) Write down three characteristics of electromagnetic waves.

ii) Due to which property of X – ray, the X ray are used in the medical field.

iii) An ultrasound wave emitted by an instrument reflected back after hitting a part of the destroyed ship and noted in the instrument again after 0.30 s. If the velocity of sound in sea water is 1500 ms^{-1} , find the distance from the ship to the part of the destroyed ship?

B) A part of the electromagnetic spectrum is given below.

P	Q	Visible light	R	X- rays	S

i) Considering the sequence of above waves, write down the types of waves that should be in the places P, Q, R, S

ii) Write 2 uses of micro – waves.

iii) Write 2 harmful electromagnetic waves.