



INTERMEDIATE

Wave Theory

Hand Notes For JEE Mains, Advance, NEET UG, Class 11 & 12 etc...

Hand Notes

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WAVE THEORY

WAVE → It is disturbance which is created in medium & transferred energy from one place to another place without any transportation of matter.

classification of Waves →

[1] → A/c to Medium →

[A] → Mechanical Wave → If ^{AIR} ^{AIIMS} medium is necessary for wave propagation of wave.

Ex → Sound Wave, Wave develops in a string.

Property of medium for mechanical wave propagation →

iii → Elasticity → due to elasticity medium particle regain its initial position.

liii → Inertia → due to inertia medium particle transfers energy.

liiii → Resistance & density of medium is min & low.

[B] → NON-Mechanical Wave → If medium is not necessary for wave propagation.

Exemplar

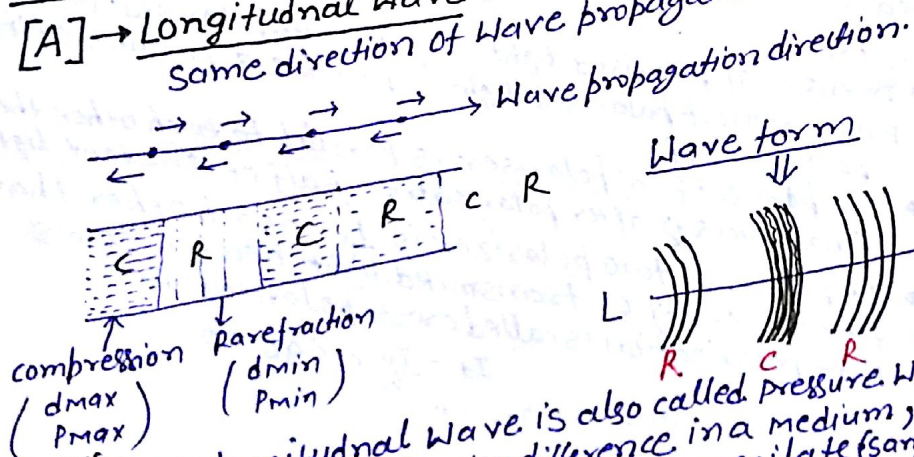
Ex → Light Wave, EM Wave (γ-ray, X-ray, U.V, visible, IR, M.W, R.W)

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NOTE → Non-mechanical wave propagates in a vacuum as well as in medium but mechanical wave propagates only in medium. (not in vacuum)

[2] → A/c to medium particle vibration →

[A] → Longitudinal Wave → If medium particle vibrates in the same direction of wave propagation.



compression
(d_{max} , P_{max})

rarefaction
(d_{min} , P_{min})

AIIMS

NOTE

Longitudinal wave is also called pressure wave bcoz it produces pressure & density difference in a medium, Boyle's law is not obeyed, bulk modulus of air oscillates (same)

A sound wave is passing through air column in the form of compression & rarefaction → There is no transfer of heat bcoz we can assume adiabatic process.

Ex → Sound Wave, wave in a spring.