

NDA-CDS 2 2024

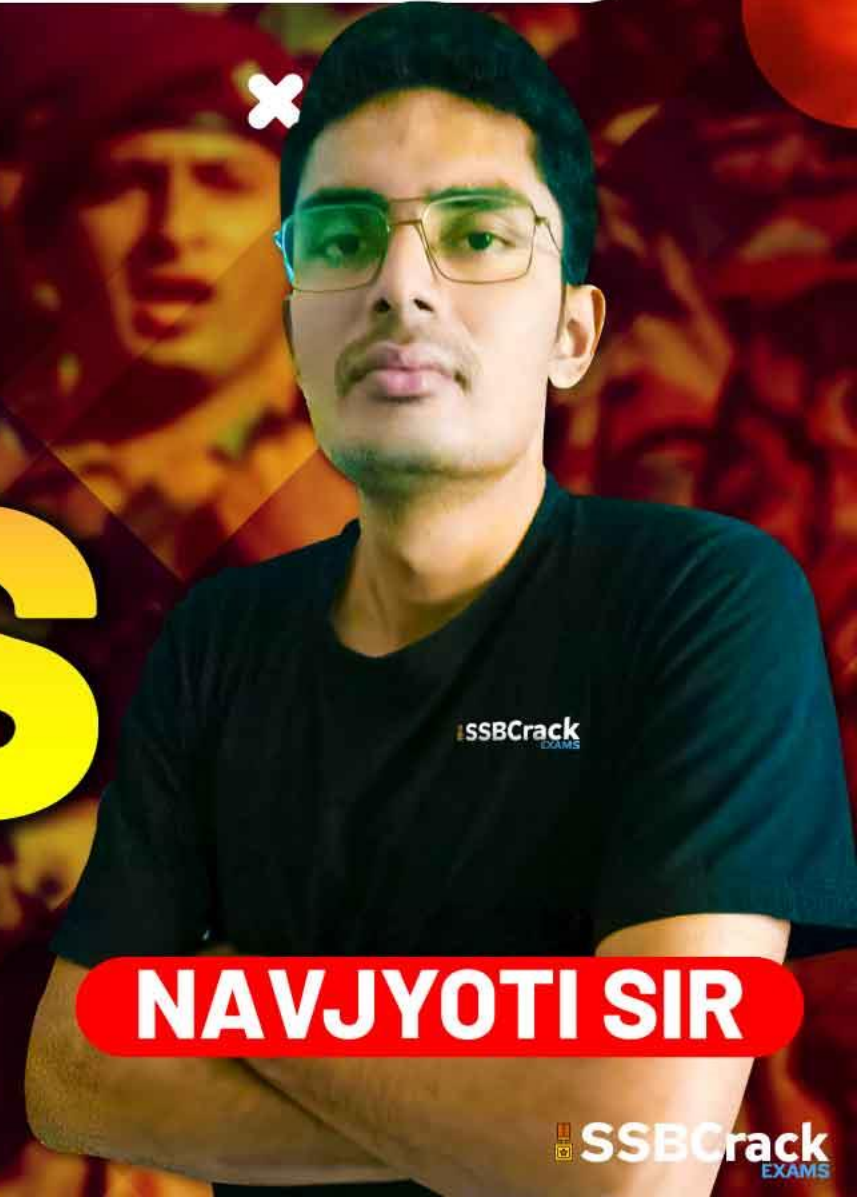
GS

LIVE

PHYSICS

REVISION

CLASS 3



NAVJYOTI SIR

SSBCrack
EXAMS



07 August 2024 Live Classes Schedule

8:00AM --- 07 AUGUST 2024 DAILY CURRENT AFFAIRS --- RUBY MA'AM

9:00AM --- 07 AUGUST 2024 DAILY DEFENCE UPDATES --- DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:00AM --- INTRODUCTION OF PPDT & PRACTICE --- ANURADHA MA'AM

AFCAT 2 2024 LIVE CLASSES

1:00PM --- MAHA MARATHON SESSION - PART 3

NDA 2 2024 LIVE CLASSES

11:00AM --- GK - HISTORY REVISION - CLASS 2 --- RUBY MA'AM

12:00PM --- PHYSICS REVISION - CLASS 2 --- NAVJYOTI SIR ✓

1:00PM --- MATHS REVISION - CLASS 3 --- NAVJYOTI SIR

2:00PM --- BIOLOGY REVISION - CLASS 3 --- SHIVANGI MA'AM

CDS 2 2024 LIVE CLASSES

11:00AM --- GK - HISTORY REVISION - CLASS 3 --- RUBY MA'AM

12:00PM --- PHYSICS REVISION - CLASS 3 --- NAVJYOTI SIR ✓

2:00PM --- BIOLOGY REVISION - CLASS 3 --- SHIVANGI MA'AM


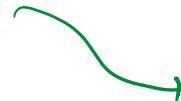

3:00PM --- MATHS REVISION - CLASS 3 --- NAVJYOTI SIR



REVISION TOPICS :

- **Human Eye and Colourful World**
- **Waves and Sound**

1. Presbyopia can be corrected by _____ lens.

- A. Convex  *Hypermetropia*
- B. Concave  *Myopia*
- C. Bi-focal  *(convex + concave)*
- D. Cylindrical

1. Presbyopia can be corrected by _____ lens.

A. Convex

B. Concave

C. Bi-focal

D. Cylindrical

2. The part of the human eye on which the image is formed is

(a) pupil

(b) cornea

(c) retina

(d) iris

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(a) pupil

(b) cornea

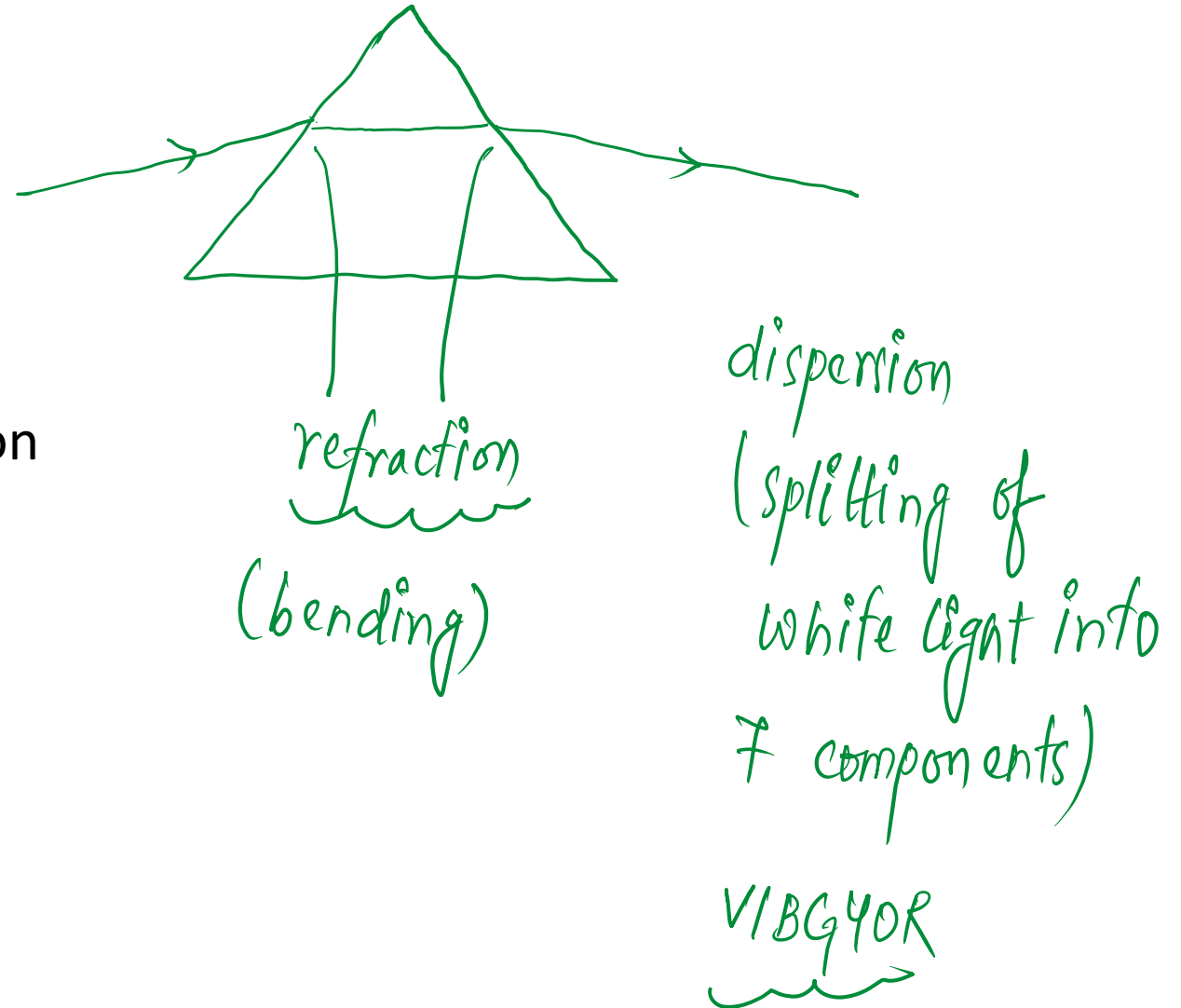
(c) retina

(d) iris

Answer: (C)

3. A prism causes

- A. Only Dispersion
- B. Only Deviation
- C. Both Dispersion and Deviation
- D. Neither Dispersion nor Deviation



3. A prism causes

A. Only Dispersion

B. Only Deviation

C. Both Dispersion and Deviation

D. Neither Dispersion nor Deviation

4. Identify the correct statement(s) ,

- 1) Iris controls the size of the pupil. ✓
- 2) Pupil controls the size of the Iris. ✗
- 3) The Eye-lens forms an inverted real image of the object. ✓
- 4) Pupil controls the amount of light entering the eye. ✓

A. 1 , 2 and 4

✓ B. 1, 3 and 4

C. 1 and 4

D. 2 , 3 and 4

4. Identify the correct statement(s) ,

1) Iris controls the size of the pupil.

2) Pupil controls the size of the Iris.

3) The Eye-lens forms an inverted real image of the object.

4) Pupil controls the amount of light entering the eye.

A. 1 , 2 and 4

B. 1, 3 and 4

C. 1 and 4

D. 2 , 3 and 4

5. How many times does a ray of light bend on passing through a prism ?

- A. Once
- B. Twice
- C. Thrice
- D. Four Times

5. How many times does a ray of light bend on passing through a prism ?

A. Once

B. Twice

C. Thrice

D. Four Times

6.

Light enters the eye through a thin membrane called

(a) retina — screen

✓ (b) cornea

(c) pupil — amount of light entering → (control)

(d) iris — size of pupil

6.

Light enters the eye through a thin membrane called

(a) retina

(b) cornea

(c) pupil

(d) iris

Answer: (B)

7.

Which of the following are the primary colours of light ?

- (a) Yellow, Red and Green
- (b) Blue, Red and Green
- (c) Violet, Red and Yellow
- (d) Indigo, Violet and Green

7.

Which of the following are the primary colours of light ?

- (a) Yellow, Red and Green
- (b) Blue, Red and Green
- (c) Violet, Red and Yellow
- (d) Indigo, Violet and Green

Answer: (B)

8. During the formation of rainbow , dispersion of sunlight is done by

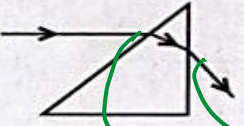
- A. Tiny Air molecules
- B. Dust Particles of Atmosphere
- C. Tiny Droplets of Rain Water Suspended in Air
- D. Air and Water.

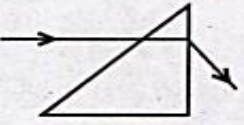
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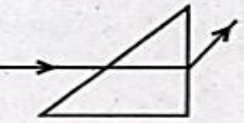
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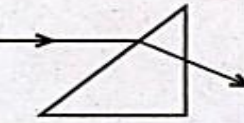
9.

Which one of the following figures correctly shows the path of a ray of light through a glass prism?

(a)  (bends at both entering and leaving the prism)

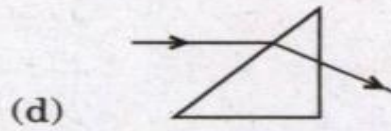
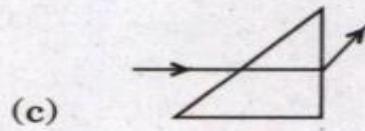
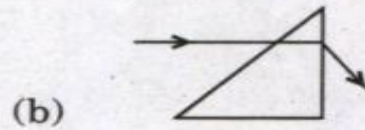
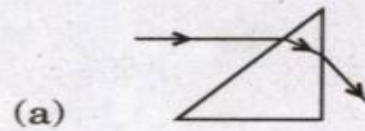
(b)  ✗

(c)  ✗

(d)  ✗

9.

Which one of the following figures correctly shows the path of a ray of light through a glass prism?

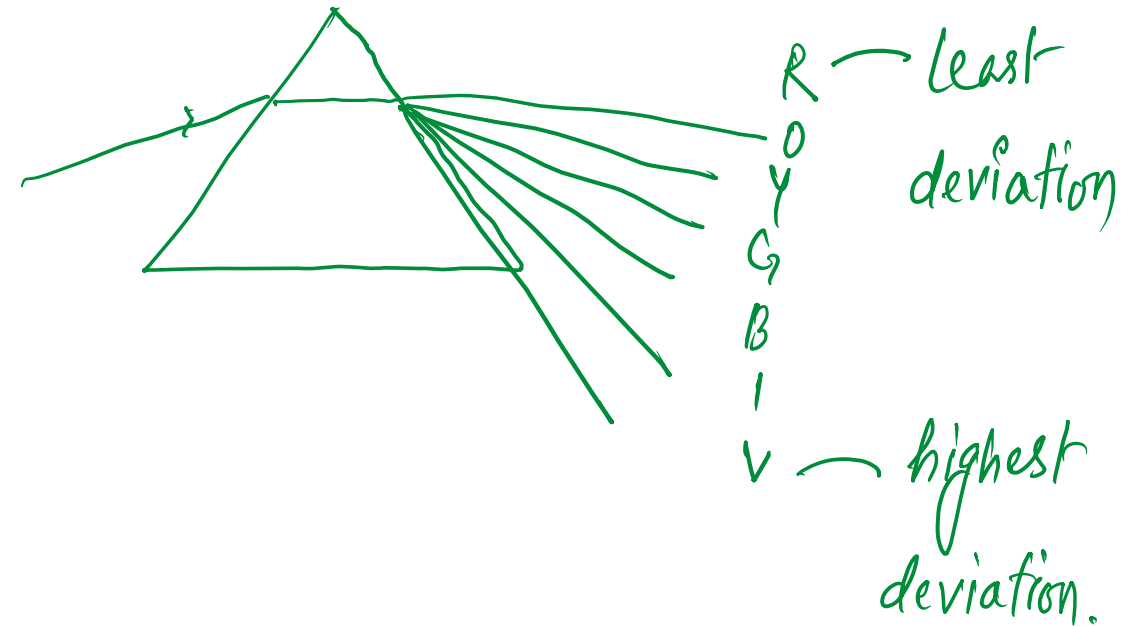


Answer: (A)

10.

A glass prism splits white light into different colours. This phenomenon is called dispersion of light by prism. Which one of the following statements is correct ?

- (a) Red light will deviate the most and it is because of the reflection of light.
- (b) Violet light will deviate the most and it is because of the refraction of light.
- (c) Red light will deviate the most and it is because of the refraction of light.
- (d) Violet light will deviate the most and it is because of the reflection of light.



- 10.** A glass prism splits white light into different colours. This phenomenon is called dispersion of light by prism. Which one of the following statements is correct ?
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 - (b) Violet light will deviate the most and it is because of the refraction of light.
 - (c) Red light will deviate the most and it is because of the refraction of light.
 - (d) Violet light will deviate the most and it is because of the reflection of light.

Answer: (B)

11. A certain person has minimum distance of distinct vision of 150 cm. He wants to read at a distance of 25 cm. What is the nature of the eye defect ?

- A. Myopia
- B. Hypermetropia
- C. Presbyopia
- D. Cataract

near point

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- B. Hypermetropia**
- C. Presbyopia
- D. Cataract

12. Human eye can see objects at different distances with contrasting illuminations. This is due to

(a) far-sightedness

(b) near-sightedness

(c) far-sightedness and near-sightedness

(d) accommodation of eye

12. Human eye can see objects at different distances with contrasting illuminations. This is due to

- (a) far-sightedness
- (b) near-sightedness
- (c) far-sightedness and near-sightedness
- (d) accommodation of eye

Answer: (D)

13. Which colour of sky will appear to the passengers flying at high altitudes,

A. Green

B. Orange

C. Blue

D. Black

13. Which colour of sky will appear to the passengers flying at high altitudes,

A. Green

B. Orange

C. Blue

D. Black

14.

Tyndall effect is a phenomenon of

- (a) scattering of light by the colloidal particles.
- (b) refraction of light by the colloidal particles.
- (c) dispersion of light by dust particles.
- (d) refraction of light by dust particles.

14.

Tyndall effect is a phenomenon of

- (a) scattering of light by the colloidal particles.
- (b) refraction of light by the colloidal particles.
- (c) dispersion of light by dust particles.
- (d) refraction of light by dust particles.

Answer: (A)

15. The dispersion of light into its components by prism is due to

A. Each component gets deviated by the same angle of Refraction.

✓ B. Each component gets deviated by a different angle of Refraction.

C. Reflection of each component light by different angle.

D. Reflection of each component light by same angle.

15. The dispersion of light into its components by prism is due to

- A. Each component gets deviated by the same angle of Refraction.**
- B. Each component gets deviated by a different angle of Refraction.**
- C. Reflection of each component light by different angle.**
- D. Reflection of each component light by same angle.**

16.

The streaming of light beams coming from the Sun through trees is said to have suggested that light travels in straight line. The particles on the path of light beams are visible to us because

- (a) dust particles in the air reflect light into our eyes
- (b) dust particles in the air scatter light into our eyes
- (c) dust particles in the air refract light into our eyes
- (d) dust particles in the air polarize light into our eyes

- 16.** The streaming of light beams coming from the Sun through trees is said to have suggested that light travels in straight line. The particles on the path of light beams are visible to us because
- (a) dust particles in the air reflect light into our eyes
 - (b) dust particles in the air scatter light into our eyes
 - (c) dust particles in the air refract light into our eyes
 - (d) dust particles in the air polarize light into our eyes

Answer: (B)

17. When white light passes through a prism , it splits into its component colours. This phenomenon is

- A. Dispersion**
- B. Reflection**
- C. Spectrum**
- D. Refraction**

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18.

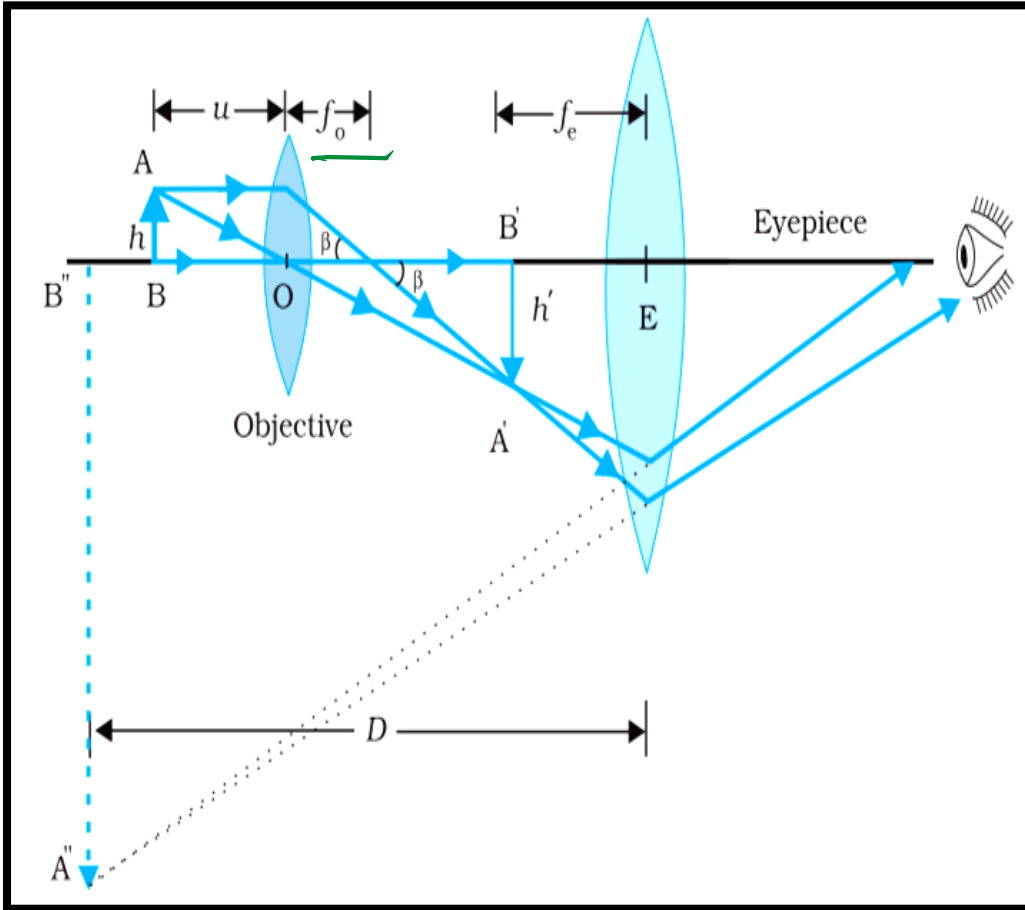
Consider the following statements about a microscope and a telescope :

1. Both the eyepiece and the objective of a microscope are convex lenses. ✓
2. The focal length of the objective of a telescope is larger than the focal length of its eyepiece. ✓
3. The magnification of a telescope increases with the increase in focal length of its objective. ✓
4. The magnification of a microscope increases with the increase in focal length of its objective. ✗

Which of the statements given above are correct?

- (a) 1 and 3 only
- (b) 1 and 4
- (c) 2, 3 and 4
- (d) 1, 2 and 3

MICROSCOPE



Magnifying Power

- (i) When final image is formed at least distance of distinct vision (D), then

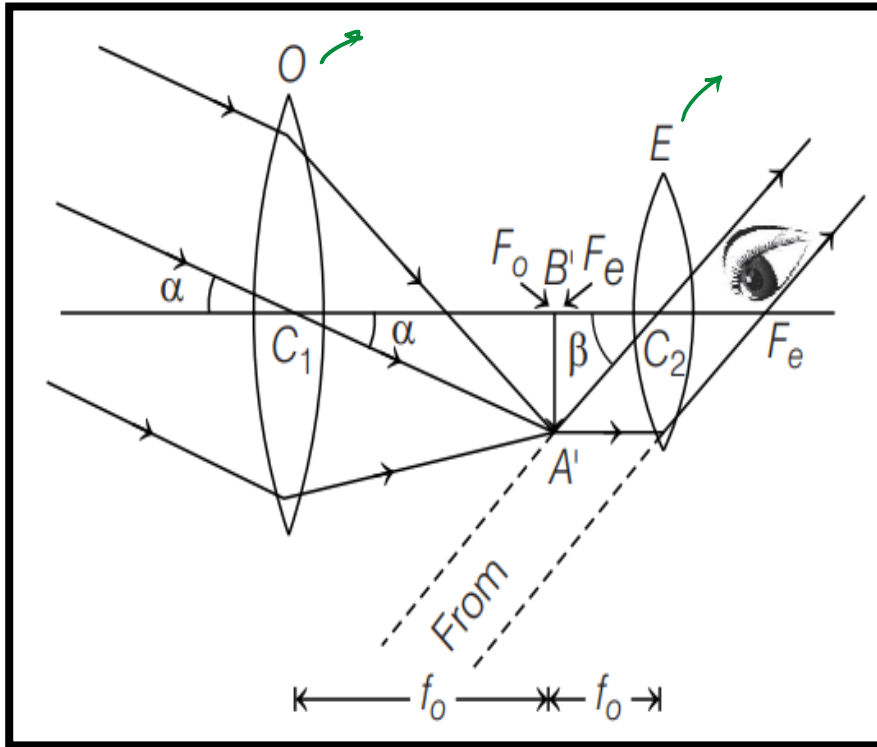
$$M = \frac{v_o}{u_o} \left(1 + \frac{D}{f_e} \right)$$

where, v_o = distance of image formed by objective lens
and u_o = distance of object from the objective.

- (ii) When final image is formed at infinity, then, $M = \frac{v_o}{u_o} \cdot \frac{D}{f_e}$

$\frac{v_o}{u_o} \left(1 + \frac{D}{f_e} \right)$ $m \propto \frac{1}{f_e}$ and does not depends on f_o .

TELESCOPE



Magnifying Power

- (i) When final image is formed at least distance of distinct vision (D), then $M = \frac{f_o}{f_e} \left(1 + \frac{D}{f_e} \right)$, where f_o and f_e are focal lengths of objective and eyepiece respectively.

Length of the telescope (L) = $(f_o + u_e)$

where, u_e = distance of object from the eyepiece.

- (ii) When final image is formed at infinity, then $M = \frac{f_o}{f_e}$.

Length of the telescope, (L) = $f_o + f_e$

$$\frac{f_o}{f_e} \left(1 + \frac{D}{f_e} \right)$$

Consider the following statements about a microscope and a telescope :

18.

1. Both the eyepiece and the objective of a microscope are convex lenses.
2. The focal length of the objective of a telescope is larger than the focal length of its eyepiece.
3. The magnification of a telescope increases with the increase in focal length of its objective.
4. The magnification of a microscope increases with the increase in focal length of its objective.

Which of the statements given above are correct?

- (a) 1 and 3 only
- (b) 1 and 4
- (c) 2, 3 and 4
- (d) 1, 2 and 3

Answer: (D)

19. The Eyeball Of A Person Has Become Slightly Larger. What Kind Of Lens Should The Person Wear To Correct The Defect In The Vision Caused By This Change In The Size Of The Eyeball ?

- A. Concave Lens
- B. Convex Lens
- C. Cylindrical Lens
- D. Plane Glass

19. The Eyeball Of A Person Has Become Slightly Larger. What Kind Of Lens Should The Person Wear To Correct The Defect In The Vision Caused By This Change In The Size Of The Eyeball

- A. Concave Lens**
- B. Convex Lens
- C. Cylindrical Lens
- D. Plane Glass

20. A Student Is Not Able To See The Blackboard Question When Seated At A Distance Of 5 m From The Board. The Defect He Is Suffering From Is

- A. Myopia
- B. Presbyopia
- C. Hypermetropia
- D. Astigmatism

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WAVES AND SOUND

1. Sound propagates at the maximum speed in

- A. Solids
- B. Liquids
- C. Gases
- D. All

1. Sound propagates at the maximum speed in

A. Solids

B. Liquids

C. Gases

D. All

2. The time taken to complete _____ number of oscillations is called Time period.

- A. One
- B. Two
- C. Ten
- D. Hundred

2. The time taken to complete _____ number of oscillations is called Time period.

A. One

B. Two

C. Ten

D. Hundred

3. Which one of the following frequency ranges is sensitive to human ears ?

(a) 0–200 Hz

(b) 20–20,000 Hz

(c) 200–20,000 Hz only

(d) 2,000–20,000 Hz only

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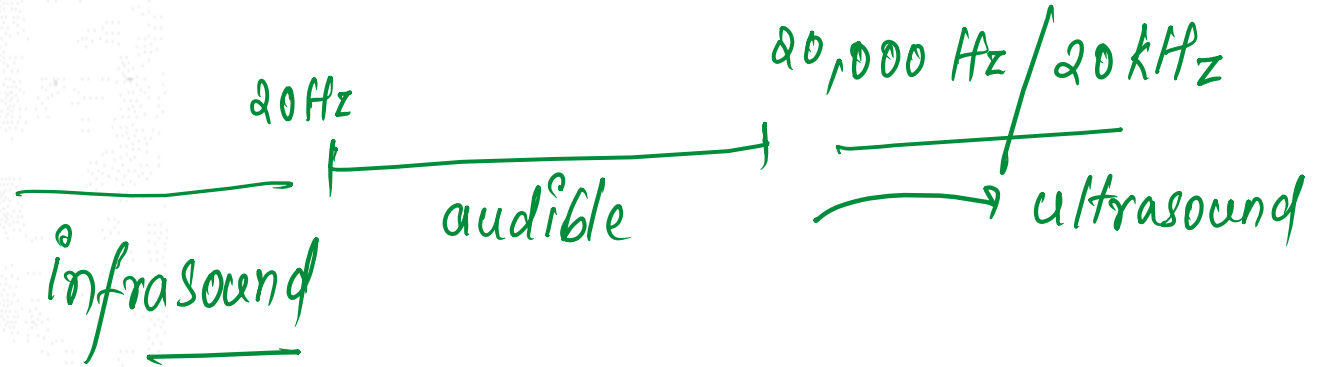
Answer: B

4. Compared to audible sound waves, ultrasound waves have
- (a) higher speed.
 - (b) higher frequency.
 - (c) longer wavelength.
 - (d) both higher speed and frequency.

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- (a) higher speed.
- (b) higher frequency.
- (c) longer wavelength.
- (d) both higher speed and frequency.

Answer: B



5. Which one of the following **cannot** be the unit of frequency of a sound wave ?

(a) dB

(b) s^{-1}

(c) Hz

(d) min^{-1}

dB — decibel — unit of Loudness.

s^{-1} , also called 'Hz'.

$s^{-1}, \text{min}^{-1}, \text{hr}^{-1}$.

$$\text{Frequency} = \frac{1}{\text{Time period}} \rightarrow \frac{1}{(s), \text{min}, \text{hr}}$$

5. Which one of the following *cannot* be the unit of frequency of a sound wave ?

- (a) dB
- (b) s^{-1}
- (c) Hz
- (d) min^{-1}

Answer: A

6. The sound created in a big hall persists because of the repeated reflections. The phenomenon is called
- (a) Reverberation.
 - (b) Dispersion.
 - (c) Refraction.
 - (d) Diffraction.

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 - (b) Dispersion.
 - (c) Refraction.
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Answer: A

7. Which of the following are the characteristics of electromagnetic waves ?

1. They are elastic waves.
2. They can also move in vacuum.
3. They have electric and magnetic components which are mutually perpendicular.
4. They move with a speed equal to 3 lakh meters per second.

Select the correct answer using the code given below :

- (a) 1, 2, 3 and 4
- (b) 1, 2 and 4 only
- (c) 2 and 3 only
- (d) 3 and 4 only

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Select the correct answer using the code given below :

- (a) 1, 2, 3 and 4
- (b) 1, 2 and 4 only
- (c) 2 and 3 only
- (d) 3 and 4 only

Answer: A

8. The flash of lightning is seen before the thunderstorm is heard. It verifies that
- (a) sound travels much faster than light
 - (b) light travels much faster than sound
 - (c) light and sound both travel with same speed
 - (d) intensity of flash of lightning is very high during thunderstorm

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- (a) sound travels much faster than light
 - (b) light travels much faster than sound
 - (c) light and sound both travel with same speed
 - (d) intensity of flash of lightning is very high during thunderstorm

Answer : B

9. The part of the human ear that converts the pressure variations associated with audible sound waves to electrical signals is

- (a) auditory nerve
- (b) cochlea
- (c) eardrum
- (d) eustachian tube

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- (a) auditory nerve
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- (c) eardrum
- (d) eustachian tube

Answer: B

- 10.** Which among the following is true for propagation of sound waves ?
- (a) Sound can travel in vacuum and it is a transverse wave in air.
 - (b) Sound cannot travel in vacuum and it is a longitudinal wave in air.
 - (c) Sound can travel in vacuum and it is a longitudinal wave in air.
 - (d) Sound cannot travel in vacuum and it is a transverse wave in air.

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 - (d) Sound cannot travel in vacuum and it is a transverse wave in air.

Answer: B

- 11.** 'Beats' is a phenomenon that occurs when frequencies of two harmonic waves are
- (a) equal.
 - (b) far apart.
 - (c) multiples of each other.
 - (d) nearly same.

- 11.** 'Beats' is a phenomenon that occurs when frequencies of two harmonic waves are
- (a) equal.
 - (b) far apart.
 - (c) multiples of each other.
 - (d) nearly same.

Answer: D

12. A sound wave has a frequency of 1 kHz and wavelength 50 cm. How long will it take to travel 1 km?

(a) 5 s

(b) 4 s

(c) 3 s

(d) 2 s

$$\begin{aligned} \text{speed} &= \text{freq.} \times \text{wavelength} \\ &= 1000 \text{ s}^{-1} \times 0.5 \text{ m} \\ &= \underline{500 \text{ ms}^{-1}} \end{aligned}$$

$$t = \frac{1000 \text{ m}}{500 \text{ ms}^{-1}} = 2 \text{ s}$$

12. A sound wave has a frequency of 1 kHz and wavelength 50 cm. How long will it take to travel 1 km?

(a) 5 s

(b) 4 s

(c) 3 s

(d) 2 s

Answer: D

13. SONAR is a device that is used to measure the distance of underwater objects by a ship. Which of the following types of waves does it use for this purpose?

- (a) Infrasonic waves
- (b) Sound waves in audible range for human beings
- (c) Ultrasonic waves
- (d) All of the above

13. SONAR is a device that is used to measure the distance of underwater objects by a ship. Which of the following types of waves does it use for this purpose?

- (a) Infrasonic waves
- (b) Sound waves in audible range for human beings
- (c) Ultrasonic waves
- (d) All of the above

Answer: C

14. Which one of the following statements about the speed of sound waves is **not** correct?
- (a) The speed of sound waves in steel is higher than that in water.
 - (b) The speed of sound waves in air decreases with increase in temperature.
 - (c) The speed of sound waves in air increases with increase in temperature.
 - (d) The speed of sound waves in water is higher than that in air.

14. Which one of the following statements about the speed of sound waves is **not** correct?
- (a) The speed of sound waves in steel is higher than that in water.
 - (b) The speed of sound waves in air decreases with increase in temperature.
 - (c) The speed of sound waves in air increases with increase in temperature.
 - (d) The speed of sound waves in water is higher than that in air.

Answer: B

15. Which one of the following types of radiations has the smallest wavelength ?

(a) Microwaves

(b) Infra-red

(c) Visible light

(d) X-rays

15. Which one of the following types of radiations has the smallest wavelength ?

- (a) Microwaves
- (b) Infra-red
- (c) Visible light
- (d) X-rays

Answer: D

16. The sound above _____ is physically painful.

A. 10 dB

B. 20 dB

C. 60 dB

D. 80 dB

16. The sound above _____ is physically painful.

A. 10 dB

B. 20 dB

C. 60 dB

D. 80 dB

17. Which one of the following optical phenomena supports that the light is a transverse wave?
- (a) Refraction
 - (b) Diffraction
 - (c) Interference
 - (d) Polarization

17. Which one of the following optical phenomena supports that the light is a transverse wave ?
- (a) Refraction
 - (b) Diffraction
 - (c) Interference
 - (d) Polarization

Answer: D

18. In electromagnetic waves , angle between electric and magnetic field vectors is

- A. 180°
- B. 0°
- C. 90°
- D. None of these

18. In electromagnetic waves , angle between electric and magnetic field vectors is

- A. 180°
- B. 0°
- C. 90°**
- D. None of these

- 19.** Which one of the following statements is true for sound waves propagating in air ?
- (a) Sound is an electromagnetic wave and transverse in nature
 - (b) Sound is a mechanical wave and longitudinal in nature
 - (c) Sound is a mechanical wave and transverse in nature
 - (d) Sound is an electromagnetic wave and longitudinal in nature

19. Which one of the following statements is true for sound waves propagating in air ?
- (a) Sound is an electromagnetic wave and transverse in nature
 - (b) Sound is a mechanical wave and longitudinal in nature
 - (c) Sound is a mechanical wave and transverse in nature
 - (d) Sound is an electromagnetic wave and longitudinal in nature

Answer: B

Which of the following statements about electromagnetic waves, sound waves and water waves is/are correct?

20.

1. They exhibit reflection
2. They carry energy
3. They exert pressure
4. They can travel in vacuum

Select the correct answer using the code given below :

-
- (a) 1, 2 and 3
 - (b) 2 and 4
 - (c) 1 and 3 only
 - (d) 1 only

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Select the correct answer using the code given below :

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- (a) 1, 2 and 3
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Answer : A

REVISION TOPICS :

- **Motion**
- **Laws of Motion**