

Heat, Light and Sound

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1. The speed of light will be minimum while passing through

- A. glass
- B. vacuum
- C. water
- D. air

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Answer : A. glass

2. "Decibal" is a unit of

- A. sound intensity
- B. Light
- C. Heat
- D. Electricity

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Answer : A. sound intensity

3. The unit of refractive index is

- A. Metre
- B. Degree
- C. No unit
- D. Second

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Answer : C. No unit

4. Light year is the unit of

- A. distance
- B. time
- C. weight
- D. intensity of light

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Answer : A. distance

5. The unit of power of a lens is

- A. decibal
- B. pascal
- C. diopter
- D. stoke

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Answer : C. diopter

6. Doppler effect in sound produces apparent change in

- A. amplitude
- B. frequency
- C. wavelength
- D. intensity

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Answer : B. frequency

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7. The process in which heat is transmitted without the aid of the intervening medium is

- A. Conduction
- B. Convection
- C. Radiation
- D. None of these

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Answer : C. Radiation

8. When a mirror is rotated by an angle of theta, the reflected ray will rotate by

- A.  $0^\circ$
- B.  $\theta/2$
- C.  $\theta$
- D.  $2\theta$

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Answer : C.  $\theta$

9. Sound is not audible in moon. Why?

- A. there is no plantation in moon
- B. moon does not have atmosphere
- C. moon is similar than earth
- D. none of these

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Answer : B. moon does not have atmosphere

10. Heat waves are otherwise known as

- A. Infra-red rays
- B. Ultra-violent waves
- C. Solar radiation
- D. X-rays

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Answer : C. Solar radiation

11. Light from the Laser is

- A. Monochromatic
- B. Composite
- C. Dispersed light
- D. Incoherent

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Answer : A. Monochromatic

12. suppose a rocket ship is receding from the earth at a speed of  $1/10$  of velocity of light. A light in the rocket ship appears blue to the passengers on the ship. What colour would it appear to an observer on the earth?

- A. blue
- B. orange
- C. yellow
- D. yellow orange

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13. Through a soap film, different colours are seen by white light because of the phenomenon of

- A. Interference
- B. Reflection
- C. Diffraction
- D. Dispersion

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Answer : A. Interference

14. A decibel is

- A. the relative intensity of sound
- B. unwanted noise
- C. a magnetic assembly in a tape
- D. the arm of a record-player

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Answer : A. the relative intensity of sound

15. Optical fibre works on the principle of

- A. total internal reflection
- B. Refraction of light
- C. Scattering of light
- D. Interference of light

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Answer : A. total internal reflection

16. The colour of an opaque object is due to the colour it

- A. absorbs
- B. refracts
- C. reflects
- D. scatters

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Answer : C. reflects

17. Reed instrument without pipe is

- A. Trumpet
- B. Harmonium
- C. Flute
- D. Natheswaram

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Answer : B. Harmonium

18. Arrange the following colours in increasing order of wavelength

- i) orange
- ii) indigo
- iii) yellow
- iv) violet

A. i,ii,iii,iv

B. i,ii,iv,iii

C. iv,ii,iii,i

D. ii,iv,i,iii

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Answer : C. iv,ii,iii,i

19. Audio cassettes are coated with which oxide?

- A. lead
- B. zinc
- C. copper
- D. iron

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Answer : D. iron

20. Transfer of heat by molecular collision is

- A. collimation
- B. conduction
- C. convection
- D. radiation

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Answer : B. conduction

21. Colour formation in the films is due to

- A. Reflection
- B. Refraction
- C. Interference
- D. Diffraction

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Answer : C. Interference

22. The one used in the preparation of lenses and prisms

- A. Soda glass
- B. Flint glass
- C. Quartz glass
- D. Pyrex glass

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Answer : B. Flint glass

23. Name the organism which files with the help of ultrasonics?

- A. owl
- B. bat
- C. dragonfly
- D. housefly

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Answer : B. bat

24. Which of the following regulates and controls the entry of light into human eye?

- A. cornea
- B. iris
- C. retina
- D. anterior chamber

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1. When sound wave is refracted from air to water, then which of the following will remain unchanged?

- a. Frequency
- b. Wavelength
- c. Velocity
- d. None of the above

**Answer (a).** Wavelength and velocity of the refracted wave would be different from the incident wave.

2. A sonometer wire having a length of 50 cm is vibrating in the fundamental mode with a frequency 100 Hz. Which of the following is the type of propagating wave and its speed?

- a. Longitudinal, 50 m/s
- b. Transverse, 50 m/s
- c. Longitudinal, 100 m/s
- d. Transverse, 100 m/s

**Answer (d).**

3. In a Laser (say neon laser) all the atoms emit the light waves of

- a. Same frequency
- b. Same amplitude
- c. Same phase
- d. All the above

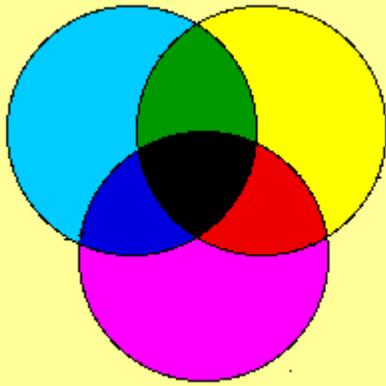
**Answer (d).**

4. Consider the following statements :

- 1. If magenta and yellow coloured circles intersect, the intersected area will have red colour.
- 2. If cyan and magenta coloured circles intersect, the intersected area will have blue colour.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



**Answer (c).**

5. Consider the following statements :

1. A flute of smaller length produces waves of lower frequency.
2. Sound travels in rocks in the form of longitudinal elastic waves only.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

**Answer (b).**

6. Which of the following types of light are strongly absorbed by plants?

- a. Violet and orange
- b. Blue and red
- c. Indigo and yellow
- d. Yellow and violet

**Answer (b).**

7. Which components of light are absorbed by chlorophyll?

- a. Violet and red
- b. Indigo and orange
- c. Blue and red
- d. Violet and yellow

**Answer (b).**

8. Which colour is the complementary colour of yellow?

- a. Blue
- b. Green
- c. Orange
- d. Red

**Answer (a).**

9. Which of the following is a wrong statement?

- a. Light travels with a speed greater than that of sound
- b. Light cannot travel through vacuum
- c. Light travels in a straight line
- d. Light is a wave motion

**Answer (b).**

10. In the visible spectrum the colour having the shortest wavelength is :

- a. Red
- b. Yellow
- c. Blue
- d. Violet

**Answer (d).**

11. Which of the following is a wrong statement?

- a. a rainbow can be seen only when the sun is at your front
- b. sometimes two rainbows can be seen simultaneously
- c. the same rainbow can be observed by two persons if both have normal vision
- d. rainbow is formed due to refraction of light in rain drops

**Answer (c).**

12. The separation of white light into its component colours is called :

- a. Dispersion
- b. Refraction
- c. Reflection
- d. Radiation

**Answer (a).**

13. Why do some automobiles have additional yellow headlights?

- a. Yellow light does not produce dazzling effect in the eyes of the people coming from front
- b. Yellow light consumes less power
- c. Yellow light is able to penetrate the fog and is thus able to illuminate the road better in foggy nights
- d. both (a) and (b)

**Answer (c).**

14. 'Newton's disc' when rotated at a great speed appears :

- a. Black
- b. White
- c. Shows seven colours
- d. Green

**Answer (b).**

15. Which one among the following is not produced by sound waves in air?

- a. Polarization
- b. Diffraction
- c. Reflection
- d. Refraction

**Answer (a).**

16. Ultrasonic waves are those sound waves having frequency

- a. between 20 hertz and 1000 hertz
- b. between 1000 hertz and 20000 hertz
- c. more than 20 kilohertz
- d. less than 20 hertz

**Answer (c).**

17. When a ray of light is going from one medium to another, its

- a. wavelength remains same
- b. frequency remains same
- c. frequency increases
- d. wavelength increases

**Answer (b).**

18. A jet plane flies through air with a velocity of 2 Mach. While the velocity of sound is 332 m/s the air speed of the plane is

- a. 166 m/s
- b. 66.4 km/s
- c. 332 m/s
- d. 664 m/s

**Answer (d).**

19. Light travels in optical fibre irrespective of its shape because it is a device by which signals can be transferred from one location to another. It is based on the phenomenon of

- a. diffraction of light
- b. refraction of light
- c. polarization of light
- d. total internal reflection of light

**Answer (d).**

20. Bats can ascertain distances, directions, nature and size of the obstacles at night. This is possible by reflection of the emitted

- a. ultrasonic waves from the bat
- b. ultrasonic waves from the distant objects
- c. supersonic waves from the bat
- d. supersonic waves from the distant objects

**Answer (a).**

21. Light travels slower in glass than in air because

- a. refractive index of air is less than that of glass
- b. refractive index of air is greater than that of glass
- c. density of glass is greater than that of air
- d. density of glass is less than that of air

**Answer (c).**

22. Sound moves with higher velocity if:

- a. pressure of the of medium is decreased
- b. temperature of the medium is increased
- c. humidity of the medium is increased
- d. both B and C above

**Answer (d).**

23. The visible light has a wavelength range from about 380 nm (violet) to 780 nm (red). If an excited object emits light with wavelength of 15 nm, to which one of the following ranges does it belong?

- a. X-ray
- b. Gamma ray
- c. Infrared
- d. Ultraviolet

**Answer (d).**

24. The audible frequency range of a human ear is

- a. 20 hertz to 200 hertz
- b. 2 hertz to 20 hertz
- c. 200 hertz to 2000 hertz
- d. 20 hertz to 20000 hertz

**Answer (d).**

25. In vacuum, the speed of light

- a. depends on its wavelength
- b. depends on its frequency
- c. depends on its intensity
- d. neither depends on its wavelength, frequency nor intensity

**Answer (d).**

26. Consider the following parts of spectra:

- 1. Visible
- 2. Infrared
- 3. Ultraviolet
- 4. Microwave

Which one of the following is the correct sequence in which their wavelengths increase?

- a. 4 – 3 – 1 – 2
- b. 4 – 1 – 2 – 3
- c. 3 – 2 – 1 – 4
- d. 3 – 1 – 2 – 4

27. Propagation of light quanta may be described by

- a. Photons
- b. Protons
- c. Neutrons
- d. Electrons

**Answer (a).**