



ALADWANA

Gem



Science

الصف 2 الإعدادى

إجابات نماذج اختبارات الأضواء لشهر إبريل

الفصل الدراسى الثانى

2024 - 2025

Model (1)

15
Marks

1 A) Complete the following sentences:

- 1 The noise intensity is measured in **decibel**, while the sound intensity is measured in **watt/M²**.
- 2 Energy of a photon = **Planck's constant × Photon frequency**.

B) Give a reason for:

- 1 A partially immersed pencil in water appears broken.
- **Due to the refraction of light rays coming from the immersed part in water.**
- 2 Sound intensity in the case of the presence of carbon dioxide gas as a medium is higher than that in case of air.
- **Because the density of carbon dioxide gas is more than that of air since the intensity of sound is directly proportional to the density of the medium.**

C) What is meant by ...?

- The absolute refractive index of glass = 1.5.
- **This means that the ratio between the velocity of light through air to that through glass is 1.5.**

2 A) Cross out the odd word:

- 1 Amplitude – Frequency – Density of the medium – Wind direction. **(Frequency)**
- 2 Skin – Leaves – Wood – Glass. **(Glass)**

B) Define each of the following:

- 1 Light reflection: **It is the rebounding of the light waves in the same medium on meeting a reflecting surface.**
- 2 Light intensity: **It is the quantity of light falling perpendicular to a unit area of a surface in one second.**

C) Calculate the frequency of a musical tone similar to the frequency of a produced tone using savart's wheel rotated with a velocity of 960 cycles in two minutes, given that the number of teeth of the gear is 30 teeth.

- **Time (t) = 2 × 60 = 120 seconds**

$$\text{Frequency (F)} = \frac{\text{No. of cycles (d)} \times \text{No. of gear teeth (n)}}{\text{Time in seconds (t)}} = 240 \text{ Hz}$$

Model (2)

15
Marks

1 A) Choose the correct answer:

- 1 A sound wave with a frequency of 200 Hz than a sound wave with a frequency of 100 Hz.
 (a) is high-pitched (b) is more rough
 (c) has more quality (d) has less intensity
- 2 Light is refracted as its changes when it passes through different transparent media.
 (a) frequency (b) velocity
 (c) quantity (d) All the previous answers

B) What happens if...?

- 1 The distance between a light source and a surface is doubled. (In terms of light intensity)
 - The light intensity decreases to quarter.
- 2 A light ray travels from air to water.
 - It refracts near the normal.

C) Mention the use of:

- Glass prism: **It analyzes the white light into seven spectrum colors.**

2 A) Put (✓) or (×):

- 1 The light rays refract far from the normal when it passes from glass to water. (✓)
- 2 By increasing the thickness of a transparent medium, the quantity of light passing through it increases. (×)

B) Compare between each of the following:

1

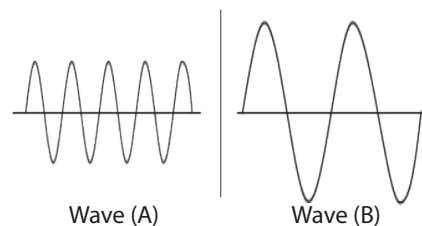
P.O.C	Noise	Musical tones
Frequency	Irregular frequency	Regular frequency

2

P.O.C	Fundamental tones	Harmonic tones
Sound intensity	They have higher intensity than harmonic tones.	They have lower intensity than the fundamental tones.

C) Look at the opposite figure, then answer:

- Which wave has the highest pitch, and which one has the highest intensity?
- **Wave (B) has the highest pitch, while wave (A) has the highest intensity.**



Model (3)

15
Marks

1 A) Write the scientific term:

- The tones that accompany the fundamental tone, but they are higher in pitch and lower in intensity. **(Harmonic tones)**
- It is the ability of the transparent medium to refract light. **(Optical density)**

B) Give a reason for:

- The absolute refractive index of any transparent medium is always greater than one.
- Because the velocity of light through air is always greater than that through any transparent medium.
- The voice of women is sharper than the voice of men.
- Because the voice of women is high pitched and has higher frequency than men.

C) Calculate the velocity of light through glass, if the velocity of light through air is 3×10^8 m/s and the absolute refractive index of glass is 1.5.

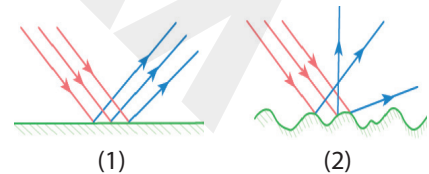
- Velocity of light _(in glass) = $\frac{\text{Velocity of light through air}}{\text{Absolute refractive index of glass}} = \frac{3 \times 10^8}{1.5} = 2 \times 10^8$ m/s

2 A) Choose the correct answer:

- Light is responsible for the formation of inverted images when rain falls.
(a) reflection (b) velocity **(c) refraction** (d) quality
- The resonance box the intensity of sound.
(a) decreases **(b) increases** (c) reduces (d) doesn't change

B) Look at the opposite figure, then answer:

- Identify the type of reflection in each figure.
- Fig. (1) represents regular reflection.
- Fig. (2) represents irregular reflection.
- State the type of surface responsible for each type of reflection.
- Fig. (1) Smooth surface, Fig. (2) rough surface.



C) What is meant by ...?

- The angle of emergence in a prism is 40° .
- This means that the angle between the emergent light ray and the perpendicular to the interface at the point of emergence equals 40° .

Model (4)

15
Marks

1 A) Complete the following sentences:

- 1 A vibrating tuning fork produces **fundamental** tone.
- 2 The **red** color has the longest wavelength, while the **violet** color has the shortest wavelength.

B) What happens when ...?

- 1 The length of the vibrating string decreases. (In terms of sound pitch)
- **The pitch of the produced sound increases.**
- 2 A light ray falls perpendicular to the interface between two different media.
- **The light ray passes without refraction.**

C) Compare between ...:

P.O.C	Transparent medium	Translucent medium
Permission of light	It permits most light to pass through.	It permits only part of light to pass through.

2 A) Correct the underlined words:

- 1 The light rays that falls perpendicular to the interface reflects at 90 degrees. (**zero degree**)
- 2 The light intensity is inversely proportional to half of the distance between the light source and the surface. (**square**)

B) What is meant by ...?

- 1 The distance traveled by light in a time of 5 seconds equals 15×10^8 meters.
- **This means that the velocity of light is 3×10^8 m/s.**
- 2 The angle of refraction of a light ray is 50° .
- **This means that the angle between the refracted light ray and the normal at the point of incidence on the interface is 50° .**

C) Savart's wheel rotates with a rate of 300 cycle per minute. A sound of frequency 600 Hz is produced when an elastic plate touches the teeth of one gear. Calculate the number of the teeth of the gear.

$$\text{Time (t)} = 1 \times 60 = 60 \text{ seconds}$$

$$\text{No. of gear teeth (n)} = \frac{\text{Time in seconds (t)} \times \text{Frequency (F)}}{\text{No. of cycles (d)}} = \frac{600 \times 60}{300} = 120 \text{ Teeth}$$

Model (5)

15
Marks

1 A) Put (✓) or (×):

- 1 When a light ray falls on a rough surface, it reflects in one direction. (×)
- 2 The velocity of light increases by increasing the density of medium. (×)

B) Give a reason for:

- 1 The piano sound differs from that of the violin even if they have the same intensity and pitch.
- **Due to the difference in the harmonic tones that associate the fundamental tone of each them.**
- 2 The energy of green photon is larger than the that of yellow photon.
- **Because the frequency of the green photon is more than that of the yellow photon.**

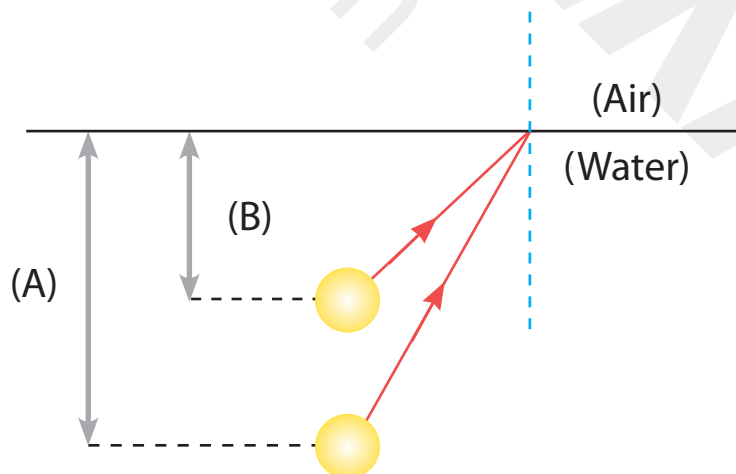
C) Explain how mirage phenomenon occurs.

- **Mirage phenomenon occurs due to the reflection and refraction of light through air layers which differ in the degree of temperature.**

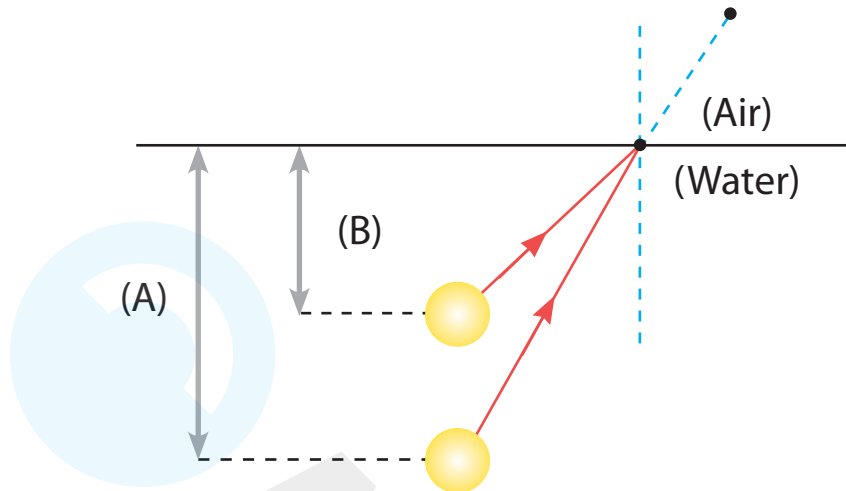
2 A) Complete the following sentences

- 1 The sound of a lion is **harsh**, so it is said that it has a **low**-pitched sound.
- 2 Light travels through **transparent** media in **straight** lines.

B) Look at the following figure, then answer:



1 Complete the path of the light rays through which the eye can see the coin inside the water.



2 What are positions (A) and (B) called?

- (A): **Real position**

(B): **Apparent position**

C- Mention one use for:

- Ultrasonic waves in the medical field:

- **It is used in breaking down kidney and ureter stones without and surgical interventions.**