

# LIGHT, HEAT, THERMODYNAMICS, WAVE MOTION, SOUND, OPTICS & OSCILLATIONS BASED GENERAL SCIENCE MCQ PRACTICE QUESTIONS AND ANSWERS PDF WITH EXPLANATION

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Created By [Careericons](#) Team

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**Q1.** Sound moves with higher velocity if

- a) temperature of the medium is increased
  - b) pressure of the medium is decreased
  - c) humidity of the medium is increased
  - d) Both (a) and (c) above
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**Q2.** What is the purpose of 'evolved Laser Interferometer Space Antenna (eLISA)' project?

- a) To detect gravitational waves
  - b) To detect the effectiveness of missile defence system
  - c) To detect neutrinos
  - d) To study the effect of solar flares on our communication systems
- 

**Q3.** For the myopic eye, the defect is cured by

- a) Cylindrical lens
  - b) Concave lens
  - c) Convex lens
  - d) Toric lens
- 

**Q4.** A thunder clap is heard 5.5 second after the lightening flash. The distance of the flash is (velocity of sound in air = 330 m/s)

- a) 300 m

- b) 1780 m
- c) 1815 m
- d) 3560 m

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**Q5.** A mirage occurs because

- a) the hot ground acts like a mirror
- b) the refractive index of atmosphere increases with height
- c) the refractive index of atmosphere decreases with height
- d) refractive index remains constant with height

**Q6.** Consider the following statements with reference to observations made by an astronaut on the surface of moon:

- The astronaut finds that a simple pendulum continues to oscillate for a much longer time, than that on the earth.
- No atmosphere exists there.

Which of the statements given above is/are correct ?

- a) Only 2
- b) Only 1
- c) Both 1 and 2
- d) Neither 1 nor 2

**Q7.** What is the decibel level of sound produced by two persons in conversation?

- a) About 10 decibel
- b) About 30 decibel
- c) About 5 decibel
- d) About 100 decibel

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**Q8.** A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

- a) Concave, plane and convex
- b) Plane, convex and concave
- c) Convex, concave and plane
- d) Convex, plane and concave

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**Q9.** 'Endoscope' used by the doctors for examining the inside of patient's stomach, works on the principle of

- a) Refraction of light
- b) Dispersion of light
- c) Reflection of light
- d) Total internal reflection of light

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**Q10.** For the construction of a thermometer, one of the essential requirements is a thermometric substance which

- a) has a property that varies with temperature
- b) has property that varies linearly with temperature
- c) remains liquid over the entire range of temperatures to be measured
- d) obey Boyle's law

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**Q11.** If a liquid is heated in condition of weightlessness, the heat is transmitted through

- a) radiation
- b) conduction
- c) convection
- d) None, because the liquid cannot be heated in weightlessness

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**Q12.** A cut diamond shines brilliantly due to

- a) Its molecular structure
- b) Total internal reflection
- c) Some inherent property
- d) Absorption of light

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**Q13.** Consider the following statements :

- Bells are made of metal and not of wood because the sound is not conducted by metals but is radiated.
- The rate of transfer of energy in a wave depends directly on the square of the wave amplitude and square of the wave frequency.

Which of these statements is/are correct ?

- a) 1 and 2 both
- b) 1 only
- c) 2 only
- d) None

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**Q14.** The simple harmonic motion of a particle is given by  $y = 3 \sin \omega t + 4 \cos \omega t$ . Which one of the following is the amplitude of this motion?

- a) 5
- b) 1
- c) 7
- d) 12

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**Q15.** Material A has a critical angle  $i_A$ , and material B has a critical angle  $i_B$  ( $i_B > i_A$ ). Then which of the following is true?

1. Light can be totally internally reflected when it passes from B to A
2. Light can be totally internally reflected when it passes from A to B
3. Critical angle for total internal reflection is  $i_B - i_A$
4. Critical angle between A and B is  $\sin^{-1}\left(\frac{\sin i_A}{\sin i_B}\right)$

a) 2 and 3

b) 1 and 3

c) 1 and 4

d) 2 and 4

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### Answers to the above questions :

Q1. Answer: (d)

Q2. Answer: (a)

Q3. Answer: (b)

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**Q4. Answer: (c)**

**Q5. Answer: (b)**

**Q6. Answer: (c)**

**Q7. Answer: (b)**

**Q8. Answer: (a)**

**Q9. Answer: (d)**

**Q10. Answer: (a)**

The temperature is measured by the value of the thermodynamic property of a substance. i.e., the property which varies linearly with the temperature.

**Q11. Answer: (b)**

Convection is not possible in weightlessness. So the liquid will be heated through conduction.

**Q12. Answer: (b)**

**Q13. Answer: (c)**

Metal is a good conductor of sound because it is solid and hence its atoms are very near, this causes more vibration required for conducting sound.

**Q14. Answer: (a)**

**Q15. Answer: (d)**

$$i_B > i_A \text{ or } \sin^{-1} \left( \frac{1}{\mu_B} \right) > \sin^{-1} \left( \frac{1}{\mu_A} \right) \text{ or } \mu_A > \mu_B$$

Hence medium A is denser and B is rarer.

**Total internal Reflection:** When the object is placed in an optically denser medium. and if the incident angle is greater than the critical angle then the ray of light gets reflected back to the originating medium.

For critical angle ( $\theta_c$ ) from medium A to B,  $\frac{\mu_B}{\mu_A}$

$$\frac{\mu_B}{\mu_A} = \frac{1}{\sin \theta_c} \text{ or } \sin \theta_c = \frac{1}{\mu_B / \mu_A} = \frac{\mu_B}{\mu_A}$$

$$\theta_c \sin \theta_c = \frac{1}{\sin i_B} \times \frac{\sin i_A}{1}$$

$$\theta_c = \sin^{-1} \left[ \frac{\sin i_A}{\sin i_B} \right]$$

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