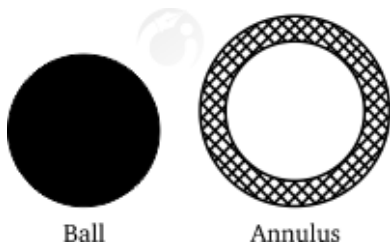


LIGHT, HEAT, THERMODYNAMICS, WAVE MOTION, SOUND, OPTICS & OSCILLATIONS BASED GENERAL SCIENCE MCQ PRACTICE QUESTIONS AND ANSWERS PDF WITH EXPLANATION

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Q1. Consider the figures of a metal ball and a metal ring given below. The metal ball can just pass through the hole of a metal ring formed out of a strip. When the ball is heated it gets stuck. But when the metal is heated



- a) The ball gets stuck because of the diameter of the hole decrease on expansion
 - b) The ball will still pass through because the hole diameter does not change
 - c) The ball can still pass through the ring as diameter expands on heating
 - d) The ball will pass through because there is no change in the ring
-

Q2. Some common mediums in which the speed of sound waves is measured are mentioned below?

- Air
- Steel
- Copper
- Water

What is the **correct** increasing order of the speed of sound?

- a) $1 < 4 < 3 < 2$
 - b) $1 < 4 < 2 < 3$
 - c) $4 < 1 < 2 < 3$
 - d) $4 < 1 < 3 < 2$
-

Q3. Optical fibre works on the principle of

- a) Scattering
 - b) Refraction
 - c) Total internal reflection
 - d) Interference
-

Q4. Which of the following statements is correct ?

- a) Frequency of ultrasonic waves is of the same order as that of X-rays
- b) Ultrasonic waves can travel in vacuum
- c) Wavelength of ultrasonic waves is of the same order as that of microwaves
- d) Speed of ultrasonic waves is of the same order as that of light

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Q5. What is the effect of humidity on sound waves when humidity increases?

- a) Speed of sound waves remains same
 - b) Speed of sound waves is more
 - c) Speed of sound waves is less
 - d) Speed of sound waves becomes zero
-

Q6. How much should minimum distance be between the source of sound and reflecting surface, so that an echo can be heard clearly?

- a) 17 metre
 - b) 24 metre
 - c) 10 metre
 - d) 30 metre
-

Q7. A shrill sound has a _____ pitch and a dull sound has a _____ pitch.

- a) low, low
 - b) high, low
 - c) low, high
 - d) high, high
-

Q8. The principle reason why it is better to have two eyes than one is that

- a) It gives a man a type of vision known as mosaic vision
 - b) By having two eyes we can easily see in the dark as well in dim light
 - c) By having two eyes we can distinguish colour easily
 - d) It enhances distance and depth perception in us
-

Q9. Consider the following statements:

- Principle of superposition can be used for any physical quantity.
- Principle of superposition can be used only when amplitude of quantity is small.
- It is not possible to have interference between the waves produced by two independent sources of same frequency.
- For interference of two waves the phase difference between the waves remain constant.

Which of the statements given above are correct?

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

Q10. When ice melts, then

- a) Volume decreases
 - b) Mass increases
 - c) Volume increases
 - d) Mass decreases
-

Q11. Food in the pressure cooker is cooked faster, as

- a) more steam is available at 100°C
- b) the boiling point increases due to an increase in pressure
- c) the boiling point decreases due to an increase in pressure
- d) more pressure is available at 100°C

Q12. Consider the following statements : If the same note is played on a flute and a sitar, one can still distinguish between them because they differ in

- frequency
- intensity
- quality

Which of the statements given above is/are correct?

- a) 2 and 3 only
- b) 1 and only
- c) 3 only
- d) 2 only

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Q13. Which of the following processes result in cooling ?

- Evaporation of liquid
- Compression of gas
- Shaking a liquid in a vessel
- Adiabatic expansion of a gas

Select the correct answer using the code given below :

- a) 2 and 3
 - b) 1 and 4
 - c) 1 and 3
 - d) 3 and 4
-

Q14. The splitting of white light into seven colours on passing through a glass prism is due to

- a) interference
- b) refraction
- c) reflection
- d) diffraction

Q15. Match List - I with List - II:

List I	List II
A. high pitch	1. Faint sound
B. low pitch	2. Loud sound
C. small amplitude	3. High frequency
D. large amplitude	4. Low frequency

Select the correct answer using the codes given below the lists:

- a) A – 4, B – 1, C – 2, D – 3
- b) A – 2, B – 1, C – 4, D – 3
- c) A – 2, B – 3, C – 4, D – 1
- d) A – 3, B – 4, C – 1, D – 2

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Answers to the above questions :

Q1. Answer: (c)

Q2. Answer: (a)

The speed of sound is maximum in solids

$$V_{\text{solid}} > V_{\text{liquid}} > V_{\text{gas}}$$

Steel is more elastic than copper, hence the speed of sound is greater in steel than in copper.

Q3. Answer: (c)

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GENETIC ENGINEERING AND BIO TECHNOLOGY

Q4. Answer: (a)

Q5. Answer: (b)

The velocity of sound = $\sqrt{\frac{RT}{M}}$

When water vapour is present in air average molecular weight of air decreases and hence velocity increases.

Q6. Answer: (a)

Q7. Answer: (b)

Q8. Answer: (d)

Q9. Answer: (a)

Principle of superposition is applicable in wave motion.

Q10. Answer: (a)

Q11. Answer: (b)

Q12. Answer: (c)

Q13. Answer: (b)

- The process of a liquid changing into its vapour below its boiling point is called evaporation. In this process remaining water after evaporation loses heat and gets cooled.
- If a gas is compressed, work is done on it which results in heating of the system or an increase in temperature.
- On shaking a liquid in a vessel, the kinetic energy of liquid molecules increases and hence, the temperature of the system increases.
- In adiabatic process $\Delta Q = 0$

From the first law of thermodynamics,

$$\Delta Q = \Delta U + \Delta W$$

$$\text{We have } \Delta U + \Delta W = 0$$

If the gas expands adiabatically ($\Delta W > 0$), ΔU will be negative, so internal energy and hence, the temperature of the system will decrease. Thus, the gas is cooled.

Thus option (b) is correct.

Q14. Answer: (b)

Dispersion arises because of basic phenomenon refraction.

Q15. Answer: (b)

The faster the vibration of source, the higher is the frequency and the higher is the pitch.

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