

## IMPORTANT QUESTIONS LIST FROM PHYSICS FOR SSC MARCH 2016

### 1. HEAT

1. What would be the final temperature of a mixture of 50 g of water at 20°C temperature and 50 g of water at 40°C temperature?
2. Explain why dogs pant during hot summer days using the concept of evaporation?
3. Why do we get dew on the surface of a cold soft drink bottle kept in open air?
4. Write the differences between evaporation and boiling.
5. Is condensation a cooling process or warming process? Explain.
6. How much energy is transferred when 1gm of boiling water at 100°C cools to water at 0°C?
7. Convert 20°C into Kelvin scale.
8. Your friend is asked to differentiate between evaporation and boiling. What questions could you ask to make him to know the differences between evaporation and boiling?
9. Define specific heat. What are the units?
10. Explain the procedure of finding specific heat of a solid experimentally.

### 3. REFLECTION AT PLANE SURFACES

1. State the laws of reflection of light.
2. How do you find the focal length of a concave mirror?
4. Find the distance of the image when an object is placed on the principal axis at a distance of 10cm in front of a concave mirror whose radius of curvature is 8cm.
5. State the differences between convex and concave mirrors.
6. Distinguish between real and virtual images.
7. Write the rules for sign convention.
8. Imagine that spherical mirrors were not known to human beings. Guess the consequences.
9. Draw suitable rays by which we can guess the position of the image formed by a concave mirror.
10. How do you appreciate the role of spherical mirrors in daily life?
11. Why do we prefer a convex mirror as a rear-view mirror in the vehicles?
12. An object is placed at a distance of 10cm from a convex mirror of focal length 15cm. Find the position and nature of the image.

### 5. REFRACTION AT PLANE SURFACES

1. Why is it difficult to shoot a fish swimming in water?
2. The speed of the light in a diamond is 1,24,000 km/s. Find the refractive index of diamond if the speed of light in air is 3,00,000 km/s.
3. Explain the formation of mirage?
4. Explain the phenomenon of total internal reflection with one or two activities.
5. What is the reason behind the shining of diamonds and how do you appreciate it?
6. If the critical angle of a medium is 30° then find the refractive index of that medium with respect to air.
7. Why do stars appear twinkling?
8. Explain the refraction of light through a glass slab with a neat ray diagram.
9. When we sit at a camp fire, objects beyond the fire are seen swaying. Give the reason for it.
10. Write about fibre optics.

### 6. REFRACTION AT CURVED SURFACES

1. A man wants to get a picture of a zebra. He photographed a white donkey after fitting a glass, with black stripes on to the lens of his camera. What photo will he get? Explain.
2. The focal length of a converging lens is 20cm. An object is 60cm from the lens. Where will the image be formed and what kind of image is it?
3. Write the lens maker's formula and explain the terms in it.
4. Can a virtual image be photographed by a camera?
5. Draw ray diagrams for the following positions and explain the nature and position of image.
  - i) Object is placed at  $C_2$
  - ii) Object is placed between  $F_2$  and P.
6. Find the radii of curvature of a convexo – concave convergent lens made of glass with refractive index  $n=1.5$  having focal length of 24cm. One of the radii of curvature is double the other.

- Suppose you are inside the water in a swimming pool near an edge. A friend is standing on the edge. Do you find your friend taller or shorter than his usual height? Why?
- How do you verify experimentally that the focal length of a convex lens is increased when it is kept in water?
- How do you find the focal length of a lens experimentally?
- How does an air bubble behaves inside water?

## 7. HUMAN EYE AND COLOURFUL WORLD

- How do you correct the eye defect Myopia?
- Explain the correction of the eye defect Hypermetropia.
- Explain the reason for the blue of the sky.
- Explain two activities for the formation of artificial rainbow.
- How do you appreciate the working of Ciliary muscles in the eye?
- Why does the sky sometimes appear white?
- If a white sheet of paper is stained with oil, the paper turns transparent. Why?
- Draw a neat labeled diagram of structure of Eye.
- Define Power of lens. What are the units?
- What is scattering?

## 11. ELECTRIC CURRENT

- How does a battery work ? Explain.
- Write the difference between potential difference and emf.
- How can you verify that the resistance of a conductor is temperature dependent?
- What do you mean by electric shock? Explain how it takes place..
- Derive  $R = \frac{\rho l}{A}$
- Explain Kirchhoff's laws with examples.
- Why do we use fuses in house hold circuits?
- Deduce an expression for the equivalent resistance of three resistors connected in series.
- Deduce the expression for the equivalent resistance of three resistors connected in parallel.

- Silver is better conductor of electricity than copper. Why do we use copper wire for conduction of electricity?
- Why do we consider tungsten as a suitable material for making the filament of a bulb?
- State Ohm's law. Suggest an experiment to verify it and explain the procedure.
- A house has 3 tube lights, two fans and a television. Each tube light draws 40W. The fan draws 80W and the television draws 60W. On the average, all the tube lights are kept on for five hours, two fans for 12 hours and television for five hours every day. Find the cost of electric energy used in 30 days at the rate of Rs. 3.00 per KWH.

## 12. ELECTROMAGNETISM

- Are the magnetic field lines closed? Explain.
- Why does the picture appear distorted when a bar magnet is brought close to the screen of a television? Explain.
- Explain the working of electric motor with a neat diagram.
- Derive Faraday's law of induction from law of conservation of energy.
- Explain with the help of two activities that current carrying wire produces magnetic field.
- Explain Faraday's law of induction with the help of activity.?
- Explain the working of AC electric generator with a neat diagram.
- Explain the working of DC generator with a neat diagram.
- How do you appreciate the relation between magnetic field and electricity that changed the life style of mankind?
- Give a few applications of Faraday's law of induction in daily life.
- Which of the various methods of current generation protects nature well? Give examples to support your answer.