Physics - ICS Part 1 Physics Full Book Short Questions Test

Q1. Why soldiers are advised to break their steps when marching on a bridge?

Ans 1: The column of soldiers, while marching on a bridge of long span is advised to break their steps. Because their rhythmic march might set up oscillation of dangerously large amplitude in the bridge structure.

Q2. Differentiate between Base Units and Derived Units.

Ans 1: Base Units:The units associated with the base quantities are called base units. Other units are derived from base units . There are meter, Kilogram, second, candela, mole, ampere, kelvin.

Derived Units:The units associated with the derived quantities are called derived units. SI units for measuring all other physical quantities are derived from the base and supplementary units. For example , newton, joule,watt and pascal are derived units.

Q3. Is a zero significant or not? Explain.

Ans 1: Azero may or may not be significant. The following rules are used.

- A zero between two significant figures is itself significant.
- Zeros to the left of significant figures are not significant .
- In decimal fraction, zeros to the right of a significant figure are significant.

However , in integers, the number of significant zeros is determined by the accuracy of the measuring instrument.

- In scientific notation, the digits other than the powers of ten are significant.

Q4. An object has one joule of potential energy.Explain what it means.

Ans 1: It means that work has been done on the body by the force of 1 N which has lifted the body through a distance of 1 m.This work has been stored in the body in the form of P.E. Which is 1J.

Q5. What is importance of bivalent formation?.

Ans 1: Due to bivalent formation of homologous chromosomes,the non sister chromatids exchange their segment during the crossing over resulting in new recombination.

Q6. Define centripetal force and centripetal acceleration.

Ans 1: The force needed to bend the normally straight path of the particle into a circular path is called the centripetal force.
The instantaneous acceleration of an object traveling with uniform speed in a circle is directed towards the centre of the circle and is called centripetal acceleration.

Q7. What are Artificial Satellites?

Ans 1: Artificial Satellites are the man-made objects that orbit around the Earth.

Q8. How can we reduce random and systematic error?

Ans 1: Reduce random error: Repeating the measurement several times and taking an average can reduce the effect of random error.

Reduce systematic error: The systematic error can be reduced by comparing the instrument with another which is known to be more accurate and a correction factor is applied.

Q9. What is Salter's duck?

Ans 1: Salter's duck is a device which can be used to utilize the water waves energy and to generate electricity .It consists of two parts

1. Duck float
2. Balance float

The wave energy makes duck float move relative to the balance float. The relative motion of the duck float is then used to run electricity generators.

Q10. How electrical energy can be obtained from sunlight by indirect conversion method?

Ans 1: By using semiconductor devices, the solar cell also called photo voltaic cell: sunlight can be directly converted into electricity. These solar cells are made of silicon wafers. Electron in the silicon gain energy from sunlight to create voltage.Voltage can be increased by increasing the number of solar cells.

Q11. Mention the criterion for positive and negative torque.

Ans 1: Positive torque: Anti-Clockwise torque is taken as positive.
Negative torque: Clockwise torque is taken as negative.

Q12. What is meant by moment of inertia? Explain its significance.

Ans 1: The product of mass of the particle and square of its perpendicular distance from the axis of rotation is called the moment of inertia.

$I = mr^2$
The moment of inertia plays the same role in angular motion as the mass in linear motion.

Q13. Define frequency and give its unit.

Ans 1: Number of vibrations per second is called frequency .
Its S.I unit is Hz.

Q14. Define Heat Engine.

Ans 1: A device which converts heat energy into mechanical work is called heat engine.

Q15. What are different types of optical fibre?

Ans 1: There are three types of optical fibres.

1. Single mode step index fibre.
2. Multimode step index fibre.
3. Multimode graded index fibre.

Q16. What do you mean by coherent source ? Explain a common method for producing two coherent sources.

Ans 1: The monochromatic sources of light which emit waves, having a constant phase difference are called coherent sources. A common method of producing two coherent light beams is to use a monochromatic source to illuminate a screen containing two small holes, usually in the shape of slits. The light emerging from the two slits is coherent because a single source produces the original beam and two slits serve only too split it into two parts.

Q17. Explain the term "Beats" .

Ans 1: Two waves that are travelling in the same direction with a slight difference in frequencies will produce beats.Number of beats per second is equal to the difference in frequencies.

Q18. As the result of distant explosion an observer senses a ground tremor and then hears the explosions.Explain the time difference.

Ans 1: The waves produced by the explosion reach the observer quickly through the ground as compared to the sound waves reaching through the air. This is due to the reason that sound travels faster in solid than gases.

Q19. Define total of flight. Derive a mathematical expression for it ?

Ans 1: The term taken by projectile from point of projection to the striking point is known as total time of flight.

Q20. Write any two uses of spectrometer.

Ans 1: It is used to study spectra from different sources of light.Its is used to determine the wavelength of light.