

S1. Ans.(b)

Sol. A fuse wire is a single, small gauge made up of a tin coated copper wire material of low melting point, usually contained in a carrier of some sort, providing a weak point in an electrical circuit that will melt on overload and disconnect the electricity load. An alloy of lead and tin coated wire is used as the material of the fuse wire.

S2. Ans.(d)

Sol. Frequency is measured by how frequently the period is completed in one second. A Time period (denoted by "T") is the time needed for one complete cycle of vibration to pass in a given point. The output signal completes a period twice as fast as the input frequency.

S3. Ans.(b)

Sol. A transformer consists of two electrically isolated coils and operates on Faraday's principle of "mutual induction", in which an EMF is induced in the transformer's secondary coil by the magnetic flux generated by the voltages and currents flowing in the primary coil winding.

S4. Ans.(b)

Sol. In AC circuits, AC meters measure rms values.

S5. Ans.(b)

Sol. The vertical plane that passes through the true geographical North and South (or geographical axis of Earth) is known as the geographical meridian. The angle between the magnetic meridian and the geographic meridian at a place is called declination at that place.

S6. Ans.(c)

Sol. A compass needle cannot be used to detect Strength of a magnet.

S7. Ans.(c)

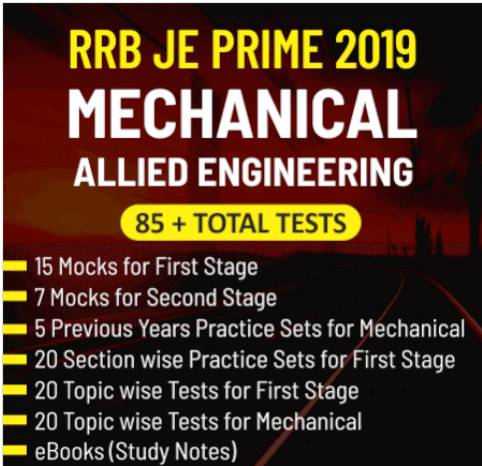
Sol. The resistance of a current carrying conductor is inversely proportional to the area of cross section of the conductor. The reason is because the resistance occurs due to the collision of electrons/charged particles. So resistance is inversely proportional to area of cross section of the conductor.

S8. Ans.(a)

Sol. Pure Silicon at room temperature has perhaps one conduction electron for every 10^{13} (that's ten trillion) atoms. Increasing the temperature of intrinsic semiconductors provides more thermal energy for electrons to absorb, and thus will increase the number of conduction electrons. Voila - decreased resistance.

S9. Ans.(b)

Sol. In electromagnetism, the magnetic susceptibility is one measure of the magnetic properties of a material. The susceptibility indicates whether a material is attracted into or repelled out of a magnetic field.



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S10. Ans.(d)

Sol. When a bar magnet is cut into two equal halves, the pole strength of each piece Remains the same.

S11. Ans(b)

Sol. Bentham and Hooker jointly published a vast work the Genera Plantarum in which they arranged their species according to a system. Since this was last of the natural systems and is widely accepted in the commonwealth countries.

S12. Ans(d)

Sol. African trypanosomiasis, also known as sleeping sickness, is an insect-borne parasitic disease of humans and other animals. It is caused by protozoa of the species Trypanosoma brucei

S13. Ans(b)

Sol. The parasite is transmitted by blood sucking tse-tse fly, Glossina palpalis. Mouth and contractile vacuole are absent. Food is absorbed through the body surface.

S14. Ans(b)

Sol. On the basis of locomotory organelles the protozoan protists are divided into four groups : Mastigophora, Sarcodina, Sporozoa and Ciliata. Trypanosoma belongs to class zooflagellata which comes under the group mastigophora.

S15. Ans(a)

Sol. The Monera Kingdom consists of organisms that do not consist of a nucleus, e.g prokaryotic cells (bacteria and archaea).

S16. Ans(a)

Sol. Brinjal and potato belong to the same genus Solanum, but to two different species.

S17. Ans(d)

Sol. The order Primata includes monkey, gorilla and man and the order Carnivora includes lion, tiger, cat and dog. These two orders are the members of the same class called Mammalia. So, man, monkey and tiger are in the same class.

S18. Ans(a)

Sol. Artificial system of classification was first used by Linnaeus. The cryptogams were included in flowering plants. Linnaeus system is known as sexual system of classification. He classified on the basis of number, size and union of sex organs.

S19. Ans(c)

Sol. Paramecium contains a single large macronucleus and one small micronucleus. The macronucleus controls metabolism such as feeding and maintenance, whereas the micronucleus takes and important role in reproduction and stores genetic information, hence it is also termed as reproductive nucleus whereas macronucleus is termed as vegetative nucleus.

S20. Ans(c)

Sol. Amoebiasis can be prevented by drinking boiled water as it mainly occurs by ingestion of cysts of E. histolytica in food or drinks.

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S21. Ans.(c)

Sol. A nucleon is either a proton or a neutron, considered in its role as a component of an atomic nucleus.

S22. Ans.(d)

Sol. Deuterium is a hydrogen isotope consisting of one proton, one neutron and one electron. It has major applications in nuclear magnetic resonance studies.

S23. Ans.(d)

Sol. The electrons in the outermost occupied shell (or shells) determine the chemical properties of the atom; it is called the valence shell. Each shell consists of one or more subshells, and each subshell consists of one or more atomic orbitals.

S24. Ans.(b)

Sol. The alpha particle is a helium nucleus; it consists of two protons and two neutrons. It contains no electrons to balance the two positively charged protons and mass 4 unit.

S25. Ans.(c)

Sol. Since it has an atomic number of 11 it must have 11 protons. Since it has an atomic mass of 23 it must have 12 neutrons. If it is electrically neutral, it will have 11 electrons.

S26. Ans.(c)

Sol. Chlorine electron configuration will be $1s^2 2s^2 2p^6 3s^2 3p^5 (2,8,7)$.

S27. Ans.(d)

Sol. Cobalt-60 therapy is the medical use of gamma rays from the radioisotope cobalt-60 to treat conditions such as cancer.

S28. Ans.(b)

Sol. In an alpha scattering experiment, few alpha particles rebounded because Positive charge of the atoms very little space.

S29. Ans.(b)

Sol. An atom has a mass number of 37 contains 20 neutrons (17 protons + 20 neutrons = 37 particles in the nucleus).

S30. Ans.(a)

Sol. The Element Having K and L Shell Fully Filled is Neon Neon Has Atomic Number 10.

S31. Ans(a)

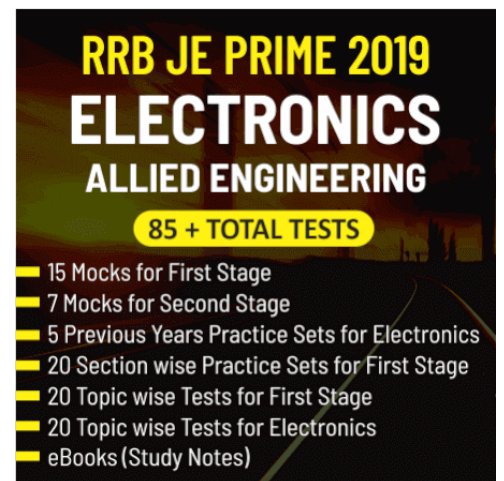
Sol. The human ear has an incredibly large range, being able to detect sound intensities from $1 \times 10^{-12} \text{ W / m}^2$ to 1 W / m^2 .

S32. Ans(c)

Sol. Sound is produced when something vibrates. The vibrating body causes the medium (water, air, etc.) around it to vibrate.

S33. Ans(b)

Sol. Loudness of Sound: Loudness of sound depends on amplitude of vibration. Loudness of sound is directly proportional to square of amplitude of vibration.



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S34. Ans(c)

Sol. The sensation of hearing of any sound persists in our brain for 0.1s. This is called the persistence of hearing.

S35. Ans(a)

Sol. Sound energy passes through a unit area held perpendicular to the direction of propagation of sound waves is called intensity of sound.

S36. Ans.(b)

Sol. Crystallography is the science that examines crystals which can be found everywhere in nature, from salt to snowflakes to gemstones. Crystallographers use the properties of the inner structure of crystals to determine the arrangement of atoms and generate knowledge which is used by chemist, physicists and other. Crystallographers use X-ray, neutron, and electron diffraction techniques to identify the characteristics of solid materials.

S37. Ans(d)

Sol. Sound travels at 343 m/s in air; it travels at 1,480 m/s in water (4.3 times as fast as in air); and at 5,120 m/s in iron (about 15 times as fast as in air).

S38. Ans.(c)

Sol. Sound waves cannot be transmitted through vacuum. It is transmitted by the movement of particles along with the direction of the motion of the sound wave. More generally, sound is a mechanical disturbance which is dependent upon a medium to travel. It can be transmitted through solids, liquids, and gases.

S39. Ans(b)

Sol. Wind can increase or decrease the speed, and can even push sound waves sideways. Air density affects it. Temperature, pressure, humidity and gas mixture can each affect the density. So Speed of sound in air depends on the Physical conditions.

S40. Ans(a)

Sol. Sound is transmitted through gases, plasma, and liquids as longitudinal waves, also called compression waves. It requires a medium to propagate.

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