

Rajasthan Board Class 10 General Science 2018 Question Paper with Solutions

Section- A

1. **Write the name of an enzyme secreted by the salivary gland.**

Answer: The enzyme released by the salivary gland is the salivary amylase or Ptyalin.

2. **Write the name of the universal donor blood group.**

Answer: O negative blood groups are often considered as universal donors.

3. **Write the general formula of alkyne series.**

Answer: The general formula for alkyne is C_nH_{2n-2}

4. **Write joule units in one kilowatt hour (1kw/hr).**

Answer: 3600000J is the joule unit found in a one-kilowatt hour.
That is 1 unit = 1 kilowatt hour = $1000 \times 60 \times 60\text{sec} = 3600000 \text{ J}$

5. **Manali Sanctuary is situated in which state?**

Answer: The Manali Sanctuary is situated at a 2 km distance from Manali, in the Himachal Pradesh state, India.

6. **Write the name of one Kharif crop.**

Answer: Rice is the name of one Kharif crop. There are other Kharif crops like Maize, Bajra, Soybean, Sorghum or cotton, etc.

7. **How many hotspots of biodiversity are there in the world?**

Answer: There are nearly 35 biodiversity hotspots in the world.

8. **Write the name of the instrument, which is used to measure blood pressure.**

Answer: The instrument used to measure the blood pressure is Sphygmomanometer.

9. **Write the name of an antibody present in the mother's milk.**

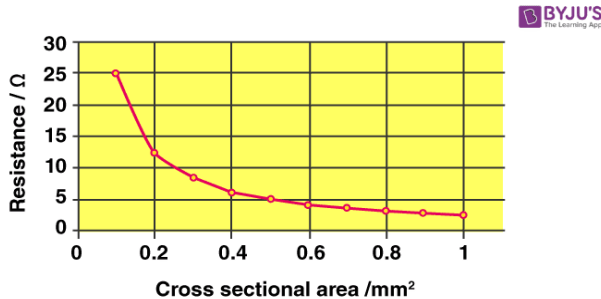
Answer: Secretory Immunoglobulin A (IgA) is the antibody present in the mother's milk.

10. **Which vaccine is used in the treatment of erythroblastosis foetalis?**

Answer: A vaccine called RhoGam or Rh immunoglobulin is used in the treatment of erythroblastosis foetalis.

11. Draw a graph between the area of cross-section (A) and resistance of different conducting wires which are made by the same material having an equal length.

Answer:



Part- B

12. What are internal tectonic forces of Earth? Explain any two forces.

Answer: **Plate tectonics** is the theory that Earth's outer shell is divided into several plates that glide over the mantle, the rocky inner layer above the core. The plates act like a hard and rigid shell compared to Earth's mantle. This strong outer layer is called the lithosphere.

13. What is a fossil? Write the name of two vestigial organs found in the human body.

Answer: A fossil is an impression or the preserved remains of a once-living organism. Typically, the most common type of fossils is bones. Fossils can also be formed from shells, exoskeleton, hairs, skin imprints, and even petrified wood. Interestingly, animal footprints, tracks, trails and even animal burrows could become fossilised. However, not all fragments of bone qualify as a fossil; only if a specimen is older than 10,000 years, it qualifies as a fossil. Fossils are essential from an evolutionary perspective as they reveal important details and insights about an organism and how it lived.

Meanwhile, vestigial organs are organs, tissues or cells in a body which are no more functional the way they were in their traditional form of the trait. It is authentication of evolution and hence, helped explain adaptation. Wisdom tooth and Appendix are two vestigial organs found in the human body.

14. Write the name of the first spacecraft of India. Explain the importance of satellites launched by India.

Answer: Aryabhata was the first launched spacecraft of India. Learn more about the

[importance of satellites launched by India.](#)

15. (a) What quantity of alcohol in the body is required for punishment when measured by a breath analyser?
(b) Explain the points of road safety action.

Answer: (a) Any person having in his blood, alcohol exceeding 30 mg per 100 ml. of blood when measured by a breath analyser is liable for punishment.

(b) Here are some points of [road safety action](#):

- High priority has been given to identify and rectify black spots (accident-prone spots) on national highways.
- Tightening of safety standards for vehicles like seat belts, anti-lock braking system, child restraint, Bus Body Code, Ambulance Code, etc.
- Check the fitness of used vehicles
- Stricter provisions are being proposed in respect to offences like juvenile driving, drunken driving, driving without a licence, dangerous driving, over-speeding, overloading, etc.

16. (a) Write any two diseases caused by Virus.
(b) Write the name of an alkaloid found in tobacco.
(c) Write two harmful effects of chewing tobacco.

Answer: (a) Polio and Influenza are two diseases caused by Virus.

(b) Nicotine is the alkaloid found in tobacco

(c) The two harmful effects of chewing of tobacco are Oral cancer and asthma

17. Write any one difference between the following:

- (a) Positive and Negative Catalyst
- (b) Thermolysis and Electrolysis
- (c) Addition and replacement reaction

Answer: (a) Positive catalyst increases the rate of reaction while negative catalyst decreases the rate of reaction.

(b) Electrolysis decomposes the ionic compounds into their elements by passing a direct electric current through the compound in a fluid form. At the same time, thermolysis is a newer method that uses localised heat.

(c) An additional reaction is a chemical reaction wherein two or more reactants come together to form a larger single product. Meanwhile, the substitution or replacement reaction is defined as a reaction in which another group substitutes the functional group of one chemical compound, or it is a reaction which involves the replacement of one atom or a molecule of a compound with another atom or molecule.

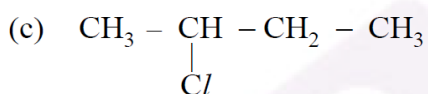
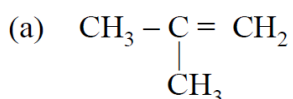
18. What is the meaning of Jhoom Cultivation? Write two main components of social forestry.

Answer: Learn about [Jhoom Cultivation](#). Two main components of [social forestry](#) include Fight Against Global Warming and Soil conservation.

19. Who is known as a missile man? Give the role of Dr. Panchanan Maheshvari in the field of botany.

Answer: Dr. A.P.J. Abdul Kalam is known as the missile man of India. Dr Panchan Maheshvari contributed towards research in plant embryology. He developed a new branch by mixing embryology with tissue culture. He also developed the technique to provide artificial nutrition to various parts of the flower for their development. He had a vast number of students across America, Argentina, Australia and other countries. He also represented India in many of the International conferences in Botany. He developed a centre for tissue culture and embryology He was also elected the Fellow of Royal Society (FRS) in 1965, in honour of his contributions.

20. Write the I.U.P.A.C. Name of the following compounds:



Answer: (a) I.U.P.A.C name is 2-methyl propene

(b) The I.U.P.A.C name is 2-butene

(c) I.U.P.A.C name is 2-Chlorobutane

21. What is waste? Explain two methods of waste management.

Answer: Waste is defined as unwanted and unusable materials and is regarded as a substance that is of no use. Waste that we see in our surroundings is also known as garbage. Garbage is mainly considered as a solid waste that includes wastes from our houses (domestic waste), wastes from schools, offices, etc (municipal wastes) and wastes from industries and factories (industrial wastes). Waste is defined as unwanted and unusable materials and is regarded as a substance which is of no use. Waste that we see in our surroundings is also known as garbage. Garbage is mainly considered as a solid waste that includes wastes from our houses (domestic waste), wastes from schools, offices, etc (municipal wastes) and wastes from industries and factories (industrial wastes). The term solid waste management mainly refers to the complete process of collecting, treating and disposing of the solid wastes. Sources of waste can be broadly classified into four types: Industrial, Commercial, Domestic, and Agricultural. Find here the methods of [disposing or managing waste](#).

Section-C

22. (a) Write the name of the silkworm larva.
 (b) Write the two products of Apiculture.
 (c) How is the thread of silk made by silkworm?

- Answer:** (a) Caterpillar is the name of the silkworm larva.
 (b) Honey and Bee-wax are two products obtained by rearing bees.
 (c) Learn about the [processing of silk thread from the silkworm](#)

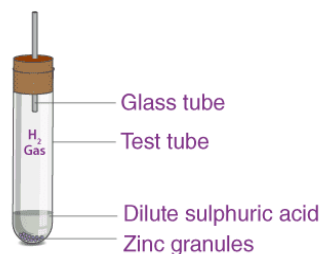
23. What is a reciprocal cross? Explain the phenotypic and genotypic ratio obtained in off-springs, when F1 generation is crossed with Homozygous dominant parents.

Answer: In genetics, a reciprocal cross is a breeding experiment used to test the role of parental sex on a given inheritance pattern. For example, it is used if a biologist wished to identify whether a hypothetical allele Z, a variant of some gene A, is on the male or female sex chromosome. If a homozygous tall (TT) plant is crossed with a homozygous dwarf (tt) plant, then in the F1 generation all plants were hybrid or heterozygous tall (Tt). In heterozygous condition, both alleles are not contaminated with one another, at the time of gamete formation both alleles segregate from each other and enter in different gametes. Due to this segregation dwarfism (tt), character reappears again in F2 generation phenotypic ratio obtained from F2 generation is 3:1, and the genotypic ratio is 1:2:1.

24. (a) Write a formula for bleaching powder. Explain its bleaching process.
(b) Draw a labelled diagram of the chemical reaction of Zn metal with dil. H₂SO₄.

Answer: (a) [Bleaching powder formula \(bleach\)](#) or Calcium hypochlorite formula is explained here along with its structure. It is also known as wet processing technology. Bleaching process results in the destruction of natural colouring matter from the textile materials in order to achieve a clean white end product.

Learn more about the [uses of bleaching powder](#) here.



Reaction of zinc granules with dil.sulphuric acid

(b)

25. (a) An observer takes two observations as given below while performing Ohm's law experiment:

S. No.	Ammeter Reading	Voltmeter Reading
(i)	0.50Amp.	2 Volt
(ii)	0.75Amp.	3 Volt

Determine the resistance of conducting wire for each observation.

Answer: (a) (i) Given that $V=2v$ and $I=0.5A$

Therefore, $R = V/I = 2 / 0.5 = 4 \text{ ohm}$.

(ii) $V = 3\text{v}$ and $I = 0.75\text{A}$

Hence, $R = V/I = 3/0.75 = 4 \text{ Ohm}$.

This shows that the resistance of the conducting wire in both observations is the same.

(b) Nichrome resistance coil of 25 ohms is connected with a 12 volt accumulator cell(Battery) and current flows through it for 15 minutes. Determine the heat produced in this coil.

Answer: The heat produced by an electric current, $H = i^2RT$

From here, we get voltage (as per Ohm's law) $=V = iR$

Hence, $H = (V^2/R) t$

Replacing the values. it will be $H = (12^2 / 25) \times 15 \times 60 \text{ s} = 5184 \text{ J} = 5.184 \text{ kJ}$

26. (a) When a force is applied by a body of 40 kg then its velocity increases from 1 metre/second to 2 metres /second. Determine work done by the force.

(b) A spring constant, $K = 4 \times 10^3 \text{ N/ m}$ is compressed by 2 cm then determines potential energy stored in spring.

Answer:(a) If mass, $m = 40 \text{ kg}$ with initial velocity at 1 ms^{-1} and final velocity at 2 ms^{-1}

Then for initial kinetic energy $= \frac{1}{2} (m) (v)^2 = (\frac{1}{2}) (40) (2) = 40 \text{ Joules}$

Now to calculate final kinetic energy $= \frac{1}{2} (m) (v)^2 = (\frac{1}{2}) (40) (4) = 80 \text{ Joules}$

(b) If k , spring constant $= 4 \times 10^3 \text{ N/ m}$, and compression (x) $= 2 \text{ cm}$

Apply the expression $E = \frac{1}{2} kx^2$ and replace the values.

Here, E is the potential energy.

Now, the $x = 2 \text{ cm}$ needs to be converted to meters. So, it will be $2 \times 10^{-2} \text{ m}$.

$E = (\frac{1}{2}) (4 \times 10^3) (2 \times 10^{-2})^2 = 4/2 \times 2 \times 10^3 \times 10^{-2} = 4 \times 10 = 40 \text{ Joules}$

27. What is biodiversity? Explain the in-situ and ex-situ conservation.

Answer: Biodiversity is the variation among living organisms from different sources including terrestrial, marine and desert ecosystems, and the ecological complexes of which they are a part. Meanwhile, find more details about the [in-situ and the ex-situ conservation of biodiversity](#).

Or

What is genetic diversity? Explain two reasons for the threat to diversity.

Answer: [Genetic diversity](#) is defined as genetic variability present within species. Genetic diversity is the product of recombination of genetic material in the process of inheritance. It changes with time and space. Activities like specific selection for harvesting, destruction of natural habitats lead to loss of diversity.

Section- D

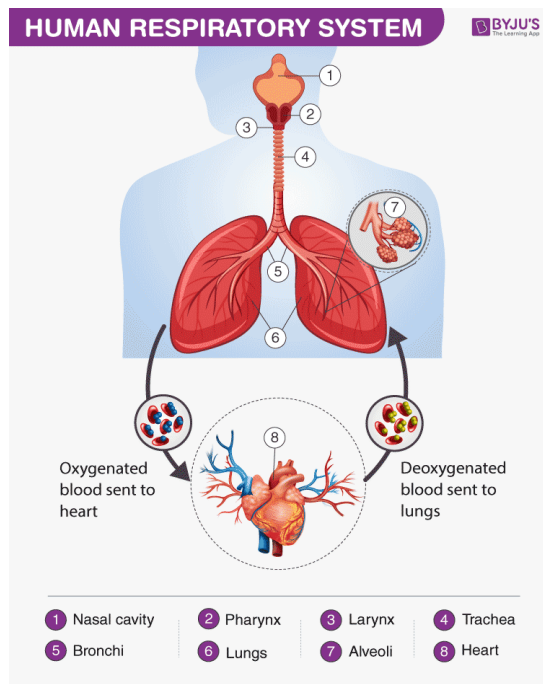
28. (a) What is respiration?

(b) Draw a labelled diagram of the human respiratory system.

(c) Explain the mechanism of respiration.

Answer: (a) Respiration is defined as a metabolic process wherein, the living cells of an organism obtains energy (in the form of ATP) by taking in oxygen and liberating carbon dioxide from the oxidation of complex organic substances.

(b)



(c) Learn more about the [mechanism of respiration](#) here.

29. (a) Elements of which block show variable valency in periodic table?

(b) Why is the size of anion greater than its atom?

(c) CaH_2 , NaH , SiH_4 , AlH_3

Give valencies of Ca, Na, Si and Al in the above compounds.

Answer: (a) The elements in p-block with higher atomic number transition and inner transition elements show variable valency.

(b) It is seen that the size of an anion is larger than its parent atom. This is because when the atom gains electrons, the anions are formed. When the number of electrons increases, the number of protons remains the same. The attractive force is reduced as the same amount of protons attract the increased number of electrons, resulting in the electrons not being bound as tightly to the nucleus, thus causing it to increase in size. Thus, we can say that anions have extra electrons, which add to the size of the atom. The extra electrons increase its size, thus making it larger than the neutral atom.

(c) The number of hydrogen atoms in the compound denotes its valency, and so the valencies of Ca, Na, Si and Al in the above compounds are 2, 1, 4 and 3, respectively.

Or

- Write the names of any two metalloids.
- How does atomic size change on moving from left to right in a period? Explain with reason.
- Arrange the elements in the ascending order of their atomic size: Na, Cs, Li, K.

Answer: (a) Boron and Germanium are the names of any two metal

(b) Atomic size or the atomic radii usually decrease, as it moves from right to left in a period. As

we move from the left to right in a period, it is that the nuclear charge increases, resulting in an increased atomic number, even if the number of shells remains the same. So, the electrons are added to the same shell, leading to the nucleus experiencing a great force.

(c) Li, Na, K, Cs is the ascending order of the elements according to their atomic size.

30. (a) The sun is visible a little before the actual sun rises and a little after the actual sunset. Explain the reason.

(b) What does it mean by the dispersion of white light?

(c) What does it mean by the total internal reflection of light?

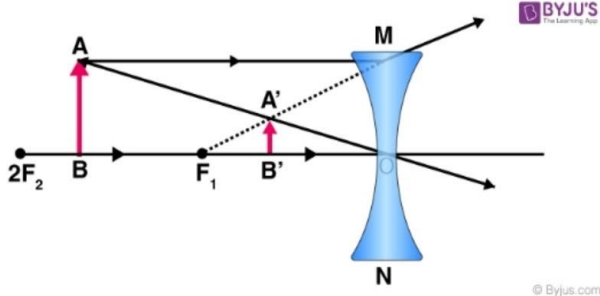
(d) Draw ray diagram for image formation by the concave lens when the object is placed between the infinity and the optical centre O.

Answer: (a) The sun is visible a little before the actual sunrise and a little after the actual sunset. This is due to the atmospheric refraction of light.

(b) Learn here about [the dispersion of white light](#).

(c) Find out about [total internal reflection of light](#) here.

(d)



or

- A pencil partly immersed in water in a glass tumbler appears askew, why?
- What does it mean by the power of the lens?
- What is astigmatism in the human eye?
- Draw ray diagram for image formation by concave mirror, when the object is placed between the centre of curvature 'C' and focus. 'F.'

Answer: (a) When a pencil is partly immersed in water in a glass tumbler, it appears to be displaced from its original position at the surface. Why does it happen? Why can't it appear to be at the normal position? The pencil seems to be displaced from its original position because light reaching our eyes from the portion of the pencil inside water comes

from a different direction. Due to this reason, the pencil in the glass tumbler appears askew.

(b) [Power of a Lens](#) is one of the most interesting concepts in ray optics. The detailed concept of this topic is given in the below article so that learners can understand this chapter more effectively. Simply put, the power of a lens in Ray Optics is its ability to bend light.

(c) [Astigmatism](#) is an optical defect that blurs the vision. When light enters a perfectly spherical lens (spherical like a basketball), it refracts or bends, evenly. If the lens is not completely spherical, the light that enters the lens is refracted more in one direction than another.

(d)

