

**GURU GOVIND SINGH PUBLIC SCHOOL**

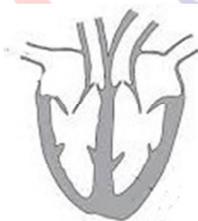
**SEC – 5, B. S. City**

**ASSIGNMENT**

**CLASS – X**

**SUBJECT – Biology**

- 1) Why are fossils considered important in the study of evolution? Explain two ways by which age of fossil fuels can be estimated?
- 2) How do Mendel's experiment show that traits may be dominant or recessive?
- 3) What is chemotropism? Give one example.
- 4) The genotype of green-stemmed tomato plants is denoted as GG and that of purple-stemmed tomato by gg. When these two are crossed,
  - a) What colour of stem would you expect in their F1 progeny?
  - b) Give the percentage of purple-stemmed plants if F1 plants are self-pollinated.
  - c) In what ratio would you find the genotypes GG and Gg in the F2 progeny?
- 5)
  - a) Why do fishes die when taken out of water?
  - b) Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?
- 6)
  - a) Mention any two components of blood.
  - b) Trace the movement of oxygenated blood in the body
  - c) Write the functions of valves present in between atriums and ventricles.
- 7) How are involuntary actions and reflex actions different from each other?
- 8) a) "Improvements in our lifestyle have resulted in greater amounts of waste generation." Give two examples to support the given statement. Suggest one change that we can incorporate in our lifestyle in order to reduce non-biodegradable wastes.  
b) The following organisms form a food chain: Insect, Hawk, Grass, Snake, Frog  
Which of these will have highest concentration of non-biodegradable chemicals? Name the phenomenon.
- 9)
  - a) Why is variation beneficial to the species but not necessary for the individual?
  - b) How do variations occur in an offspring?
- 10)
  - a) With the help of an example explain how indiscriminate use of pesticides may result in the degradation of the environment.
  - b) What are the by-products of fertiliser industries? How do they affect the environment?



- 11)
  - a) From the above diagram identify any two parts which carry oxygenated and deoxygenated blood.
  - b) Explain the process of double circulation with the help of a flow chart.
- 12)
  - a) Describe the role of prostate gland, seminal vesicle and testes in the human male reproductive system.
  - b) How is the surgical removal of unwanted pregnancies misused?
  - c) Explain the role of oral contraceptive pills in preventing conception.

- 13) Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage?
- 14) What changes would you suggest in your home in order to be environment friendly?
- 15) With the help of an example explain where active involvement of local people leads to efficient management of forest.
- 16) Explain the statement, "Bile does not contain any enzyme but it is essential for digestion"
- 17) "Two areas of study namely 'evolution' and 'classification' are interlinked". Justify this statement.
- 18) What is speciation? List four factors responsible for speciation.
- 19) How will an organism be benefitted if it reproduces through spores?
- 20) Illustrate the following with the help of suitable diagrams: -
  - a) Spore formation in Rhizopus
  - b) Multiple fission in Plasmodium

### Physics

- 1) Define the following terms
  - a) Pole
  - b) Focal length
  - c) Principal focus
  - d) Principal axis
 Also differentiate between concave and convex mirror.
- 2) Draw the ray diagram using concave mirror when object is placed
  - a) Beyond C
  - b) Between C and F
  - c) Between F and P
- 3)
  - a) What do you mean by Refractive Index. Write its units.
  - b) Show the refraction of light through glass slab.
- 4) Define one diopetre of power of lens. Find the power of lens if focal length is -25 cm. Also write the nature of lens.
- 5) What is myopia? What are its causes? How it can be corrected? Also draw the ray diagram of defective eye and corrected eye.
- 6) What is Hypermetropia? What are its causes? How it can be corrected? Also draw the ray diagram of defective eye and corrected eye.  
What do you mean by power of accommodation?
- 7) Draw the following ray diagram
  - i) Refraction of light through glass prism
  - ii) Dispersion of light through prism
  - iii) Recombination of white light through prism
- 8) Give the reason of the following:
  - i) Formation of rainbow
  - ii) Advance sunrise and delayed sunset
  - iii) Sky appear blue
  - iv) Sun appear red during sunrise and sunset
- 9)
  - a) Define the following terms.
    - i) One Ampere
    - ii) One volt
    - iii) One ohm
  - b) State Ohm's law. Write the factors on which resistance of a conductor depend.
- 10) Prove the formula of parallel combination of resistance with suitable circuit diagram.
- 11) Explain the following:
  - i) Heating effect of electric current (Joule's experiment)
  - ii) Why tungsten is used for filament of bulb.
  - iii) Why does the cord of an electric heater not glow while the heating element does?
  - iv) Why is the series arrangement not used for domestic circuits?
- 12)
  - a) Draw the magnetic field lines around the bar magnet.
  - b) The magnetic field in a given region is uniform. Draw the diagram to represent it.
  - c) Why magnetic field lines do not intersect each other?
- 13)
  - a) Write the principle and working of electric generator with labelled diagram.
  - b) Name two safety measures commonly used in electric circuits.
- 14) Write the characteristics of good sources of energy.
- 15) What is biogas? Draw the schematic diagram of biogas plant.

- 16) a) What is wind mill? Write its two advantages and two disadvantages.  
 b) What are advantages and disadvantages of using solar cooker?
- 17) A convex mirror used for rear-view on an automobile has radius of curvature of 3m. If a bus is located at 5 m from this mirror. Find position, nature and size of image.
- 18) A concave lens of focal length 15cm forms an image 10 cm from the lens. How far is the object placed from the lens. Draw the ray diagram.
- 19) Which uses more energy, a 250W TV set in 1 hr, or a 1200W toaster in 10 minutes?
- 20) Show how you would connect three resistors, each of resistance 6  $\Omega$ . So that the combination has a resistance of i) 9  $\Omega$  ii) 4  $\Omega$ .

### Chemistry

#### Very short questions

- Which gas is usually liberated when an acid reacts with a metal? Illustrate with an example.
- Write the molecular formula of the 2<sup>nd</sup> and 3<sup>rd</sup> member of the homologous series whose first member is methanol.
- Tap water conducts electricity whereas distilled water does not. Why?
- An organic compound burns with a sooty flame. Is it a saturated or an unsaturated compound?
- Tooth enamel is one of the hardest substances in our body. How does it undergo damage due to eating chocolates and sweets? What should we do to prevent it?
- Name the process of converting vegetable oil to vegetable ghee.
- During summer season, a milkman usually adds a very small amount of baking soda to fresh milk. Give one reason.
- Name the functional group in the given compound  $\text{CH}_3\text{CH}_2\text{COOH}$ .
- Why do potato chip manufacturers fill the packet of chips with nitrogen gas?
- A solution of a substance 'X' is used for white washing. Name the substance 'X' and write its formula.
- Explain double displacement reaction with a suitable example.

#### SHORT QUESTIONS

- What is a homologous series of carbon compounds? List its any two characteristics.
- A metal 'M' when dipped in aqueous solution of aluminium sulphate no reaction is observed whereas when it is dipped in an aqueous solution of ferrous sulphate, the pale green solution turns colourless. Identify metal 'M' with reason.
- Crystals of copper sulphate are heated in a test tube for some time :-  
 (i) What is the colour of copper sulphate crystals before heating, and after heating?  
 (ii) What is the source of liquid droplet seen on the inner upper side of the test tube during the heating process?
- What is meant by isomer? "We cannot have isomer of the first three members of alkane series." Give reason to justify this statement.  
 Draw the structures of two isomers of pentane.
- Two carbon compounds 'X' and 'Y' have the molecular formula  $\text{C}_3\text{H}_8$  and  $\text{C}_3\text{H}_6$  respectively. Which one of the two is most likely to show addition reaction? Justify your answer.
- State reason for the following :-  
 (i) Lemon is used for restoring the shine of tarnished copper vessels.  
 (ii) A metal sulphide is converted into its oxide to extract the metal from its sulphide ore.  
 (iii) Copper wires are used in electrical connections.
- A brown substance 'A' on heating in air forms a substance 'B'. When hydrogen gas is passed over heated 'B', it again changes back into 'A'.  
 (i) Name substance 'A' and 'B'.  
 (ii) Name the type of reactions occurring during both the changes.  
 (iii) Write the chemical equations of the reactions.
- Give reason why carbon can neither form  $\text{C}^{4+}$  cations nor  $\text{C}^{4-}$  anions, but forms covalent compounds which are bad conductors of electricity and have low melting and boiling points.
- A small amount of lead nitrate is heated in a boiling tube over a flame. Now answer the following:-  
 (i) State the colour of fumes evolved and the residue left.  
 (ii) Name the type of chemical reaction that has taken place stating its balanced chemical equation.

21. In one of the industrial processes used for manufacture of sodium hydroxide, a gas 'X' is formed as by product. The gas 'X' reacts with lime water to give a compound 'Y' which is used as a bleaching agent in chemical industry. Identify X and Y giving the chemical equation of the reaction involved.
22. Na, Mg and Al are the elements of 3<sup>rd</sup> period of the Modern Periodic Table having group number 1, 2 and 13 respectively. Which one of these elements has the  
 (i) Highest valency (ii) Largest atomic radius and  
 (iii) Maximum chemical reactivity? Justify your answer stating the reason for each.
23. (a) What do you mean by Thermite reaction? Write its one application.  
 (b) Differentiate between roasting and calcination with one example of each.

**LONG QUESTIONS**

24. (a) A dry pallet of common base 'X', when kept in open air absorbs moisture and turns sticky. The compound is also a by product of chlor-alkali process. Identify 'X'. What type of reaction occurs when 'X' is treated with strong acid? Write a balanced chemical equation for such reaction.  
 (b) Can we store base 'X' in an aluminium container? Give reason in support of your answer.
25. (a) What were the two major shortcomings of Mendeleev's periodic table? How have these been removed in modern periodic table?  
 (b) Two elements X and Y having atomic number 12 and 16 respectively. Write the electronic configuration for these elements. To which period of the modern periodic table do these two elements belong? What type of bond will be formed between them and why?
26. An element placed in 2<sup>nd</sup> group and 3<sup>rd</sup> period of the periodic table, burns in presence of oxygen to form a basic oxide.  
 (a) Identify the element.  
 (b) Write the electronic configuration.  
 (c) Write a balanced equation when it burns in the presence of air.  
 (d) Write a balanced equation when this oxide is dissolved in water.  
 (e) Draw the electron dot structure for the formation of this oxide.
27. (a) Giving one example of each, explain how the following metals are obtained from their compounds by the process of reduction.  
 (i) Metal 'A' which is low in the activity series of metals.  
 (ii) Metal 'B' which is in the middle of the activity series of metals.  
 (iii) Metal 'C' which is high in the activity series of metals  
 (b) What is meant by refining of metals? In the electrolytic refining of metal M, name the cathode, anode and the electrolyte.
28. An organic compound A having molecular formula  $C_2H_4O_2$  reacts with sodium metal and evolves a gas B which readily catches fire. A also reacts with ethanol in presence of conc  $H_2SO_4$  to form sweet smelling substance C used in making perfumes.  
 a. Identify compound A, B and C with their names.  
 b. Write balanced chemical equation to represent conversion of  
 i. Compound A into compound B.  
 ii. Compound A into compound C.  
 c. Write the chemical composition of detergent. Mention their advantage over soaps for washing clothes.

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