10 STANDARD

SCIENCE

VIKASA

District Institute of Education and Training
Chikkamagaluru

MESSAGE

The role of schools is important to the overall development of students. The preparation of multiple questions with a single answer is a tool for improving the learning level of the students, specially in science. Likewise this book is simply designed as a guide for 10^{th} standard students to get practical, logical, occupational, business and technical knowledge.

This literature is intended to alleviate the confusion that students may experience when writing exams. Usually in science variety of questions are being asked, the answer of which is if even known by the student some times failed to attend in the examination. So this book is a process-based literature that provides students with a list of questions that can be deduced in a variety of ways with only one answer. It will help the student to overcome the fear of examination and boost confidence. Congratulations to the **District Intitute of Education and Training Chikkmagaluru** and the **Science Resource Teachers Team of Chikkamagaluru** who worked behind it.

Smt. S Poovitha I A S
C E O Zilla Panchayath
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MESSAGE

Covid - 19 in the current scenario where pandemic is causing lots of disturbance in the routine academic sphere as education. Many programmes are in place to maintain continuity in student learning. Students at the main stage of the S S L C will have to face the annual exam confidently. In this regard this book with multiple questions with single answer, designed by DIET **Chikkmagaluru** will act as sanjeevini for students of 10^{th} standard.

This book is very useful as a **"Vikasa"** of science as the name of the book suggests. It is a way to offset the doubts that exist among the students. Congratulations to the team of **Science Resource Teachers** and **District Institute of Education and Training Chikkmagaluru** who worked hard to bring out this book .

Mr M R Maruthi
Director
D S E R T Banglore

PREFACE

"Science is a cause of change
Science is learning so many new things.
Removes the darkness of Ignorance in this world"

Conducting classes in schools during the academic year 2020-2021 is challenging for teachers and children. The sense of awe of corona in our country and other countries too, and hence the lockdown to impose complete restraint from Corona, results in lot of changes in all spheres of education system at varies levels. This leads to more emphasis on online education. So it is the responsibility of all of us to take the courage to provide students with suitable self learning material which in turn help the student to face the examination with confidence.

In such a scenario we have created Science Resource Teachers team and this book is designed to improve the outcome. It is a guideline and answers to the questions that cause confusion among students based on science subject. The foundation of this book is to alleviate the confusion that students may feel while writing science examination. Students fail to answer the question even if they know the correct answer because the question is application-based or twisted.

In this regard, students are given the ability to write the answer for any number of questions that can be answered in the same way without having to confuse them during the examination. There were many questions that could be answered with a single answer. So with Possible application level questions in science and relevant answers we have designed this book in both English and Kannada version titled as Science **"Vikasa"**. It is our great pleasure that this book is being designed by the **District Institute of Education and Training Chikkmagaluru.**

I Conway my regarts to our DIET senior lecturers and team of lecturers who work hard to bring out this book, entitled Science **"Vikasa"**. Also Congratulations to the our Science Resource Teachers Team of Chikkamagaluru and the supervised teacher Mr. Neelakantappa K G and Mr. Prashant T H who managed the mobilization. I wish all the school teachers and students of this district to take advantage of this book and wish them good results in science.

SMT. H K PUSHPALATHA
PRINCIPAL DIET AND
DDPI (DEVELOPMENT)
CHIKKAMAGALURU

MESSAGE

“Science is the processes of learning
When it takes us from confusion to rationality.”

As the above quote says, the process of making science questions in this book is created with multiple questions having single answer which in turn helps the students to attend the application level questions by enhancing the knowledge and active thinking.

Students of rural backgrounds will get maximum befit from it. This book is a way for these children to have scientific, logical thinking, containing techniques such as different dimensions of questions and specific answer specifications. The book is designed to help the students to prepare for the examination with confidence without fear. And in this regard this book will acts as Sanjeevini for the students of 10^{th} standard.

This book has been designed by **District Institute of Education and Training Chikkmagaluru** with the help of **District Science Resource Teachers Team** I congratulate for their work . I hope that the students in the 10th grade will make great use of this book. Good luck to all the students who are writing the S S L C Examination.

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CONTENTS

PHYSICS

ELECTRICITY

1. Electricity has an important place in modern society. Justify your answer?

Ans : It is a controllable and convenient form of energy. we can convert one form of energy into other. and it is pollution free

2.1 Define the unit of current ?
2.2 Define ampere ?

Ans : Ampere is flow of one coulomb of charge per second .1A=1C/1S

3.1 Calculate the number of electrons constituting one coulomb of charge?

Ans : $6x10^{18}$ electrons

4.1 Name a device that helps to maintain potential difference across a conductor?

Ans : Cell or battery

5.1 What is meant by saying that the potential difference between two points is 1V?
5.2 Define 1Volt potential difference?

Ans : potential difference between two points in an electric circuits carrying some current is the work done to move a unit charge from one point to other.

6.1 How much energy is given to100 coulomb of charge passing through a 20V battery ?
6.2 How much work is done when 100C charges passing through 20V battery?

Ans : V= 20 ,Q=100 ,W= ?

V=W/Q

W=VxQ

W=20x100

W=2000J

7. Write the symbol denotes for what in an electric circuit ?

Ans : Variable resistance

8.1 State ohm's law ?
8.2 State the law which correlates potential difference ,current and resistance?

Ans : "The potential difference (V) across the ends of a given metallic wire in an electric circuit is directly proportional to the current flowing through it."

$V \propto I$

$V = IR$

9. .why does the cord of an electric heater not glow while the heating element does?

Ans : The heating element of the heater is Alloy which has very high resistance so when current flows through the heating element, it becomes too hot and glows red. But the resistance of cord which is usually copper or Aluminium is very low so it does not glow.

11. Name some devices which works on the heating effect of electric current? On which principle does an electric heater and electric iron works ?

Ans : Electric iron and electric heater , principle : Joules heating effect.

12. what are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series?

Ans : electrical devices need currents of widely different values to operate properly but if it is connected in series the current is constant throughout the circuit.

13. what determines rate at which energy is delivered by a current? write the formula and unit for it?

Ans : Electric power ,P= W/t ,P=Vxt ,P=V^2/R, unit is Watt

14.1 Give reason a) why is the tungsten used almost exclusively for filament of electric lamps?
14.2 b) Copper and Aluminium wires are used in electric transmission lines

Ans : a) The metal tungsten is almost exclusively used for the filament of the electric lamp because it has a very high melting point due to which it does not melt even when it is heated to high temperature.
b) Aluminium and Copper wires are used in electric transmission lines because they have very low resistivity, it decreases the rate of resistance, which will increase the amount of current flowing through the conductor and they are good conductors of electricity

15. Why the electrical heating appliances are made out of alloys?

Ans : Because they have high Resistivity and melting point is also high in them.

16. Which gas is filled in the electric bulbs containing tungsten filament and why?

Ans :electrical bulbs are filled with chemically inactive elements like nitrogen and Argon because to prolong the life of filament.

16.1 State joules law of heating ? write the mathematical form of this law? And 4 applications of this law ?
16.2 State the law related to $H=I^2RT$ this mathematical formula ?

Ans : According to the Joules law of heating, the heat produced in a resistor is directly proportional to the: a) the square of current for a given resistance b) resistance for a given current c) the time for which the current flows through the resistor.
$H= I^2RT$
APPLICATIONS of Joules law of heating are, electric laundry iron, electric toaster, Electric oven and electric heater are some of the familiar devices based on Joules heating.

17. An electric iron of resistance 20ohm takes a circuit of 5A .Calculate the heat developed in 30sec ?

Ans : $H=I^2RT$
$H=(5)^2 x20x30$
H=15000J

18.1 On what factors does the resistance of a conductor depends.?
18.2 What is the relation between resistance and area of cross section.?
18.3 What would be the effect on the resistance of a metal wire if a) increasing its length b) increase in its diameter.

Ans : The resistance of a conductor depends on_
a) length of the conductor
b) area of cross section of the conductor
c) nature of material
$R \propto l/A$
$R=\rho.l/A$
Resistance of a conductor is inversely proportional to area of cross section.

19. The resisters with resistances 3Ω ,4 Ω,and 5Ω are connected a) in series b) in parallel. Find the total difference in the resistance.

Ans : a) In series connection R_S= 3+4+5=12 Ω

b) In parallel connection R_P=⅓+¼+⅕ =1.28Ω

Difference between resistances ,R_S-R_P= 12Ω-1.28Ω =10.72Ω

20. Resistances of 4Ω produces 100J of heat per second. Find the potential difference between the resistors ? H=100 R=4 t=1sec V=?

Ans : H= I^2RT

I^2=H/RT

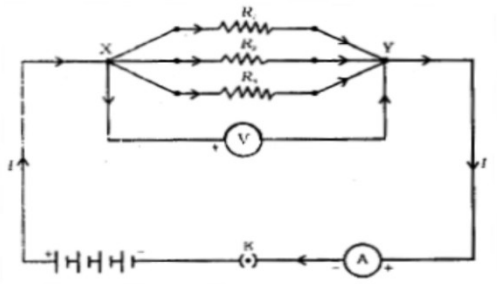
=100/4x1

I^2 =25

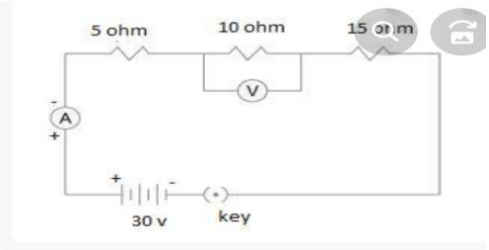
I =5A

21. The diagram of an electric circuit in which the resistors R1,R2, and R3 are connected in parallel including an ammeter and a voltmeter and mark the direction of the current.

Ans :



22.Observe the below circuit and find out electric current flowing through the circuit ?



Ans : R_S= 5+10+15= 30Ω

I =V/R = 30/30= 1A

23. Explain two dis advantages of series arrangement for household circuit?

Ans : 1. In series cicuit if one electrical appliance stops working due to some defect then all other appliances also stop working because the whole circuit is broken.

2.In series circuit all the electrical appliances have only one switch due to which they cannot be turned off or turned on separately.

24. Why voltmeter should be connected parallel in the circuit ?

Ans : Voltmeter has high resistance if it is connected in series flow of electric current not takes place.

25.1 In any Domestic circuits electrical appliances should be connected parallel .Why ?

25.2 Give two reasons why different electrical appliances in a domestic circuit are connected in parallel ?

Ans : The arrangement of light and various other electrical appliances in parallel circuits is used in domestic wiring because ,

1.In parallel circuits if one electrical appliance stops working due to some defect then all other appliances keep working normally.

2. In parallel circuits each electrical appliance has its own switch due to which it can be turned on or t urned off independently without affecting other appliances.

A voltmeter is to be connected in the circuit to measure potential difference across a conducter.
The voltmeter is always connected in parallel across the conducter.

26. Why ammeter should be connected series in the circuit?

Ans : Ammeter is used to measure flow of electric current, current should flow through this. because of low resistivity if it is connected in parallel there is a chance of short circuit.

27. Practically it is not good to connect 40v bulb and 1400V toaster in a series .why?

Ans : Bulb and toaster to work properly they need different amount of current .if they connected in series same amount of current flows through all parts.that is why practically it is not good.

28. Three resistors of 10Ω ,15Ω, 5Ω are connected in parallel find their equivalent resistance ?

R1 =10Ω R2=15Ω R3=5 Ω

R1,R2,andR3 are connected in parallel,then equivqlent resistance

$$\frac{1}{RP} = \frac{1}{R1}+\frac{1}{R2}+\frac{1}{R3}$$

$$= \frac{1}{10}+\frac{1}{15}+\frac{1}{5}$$

= 11/30

= 2.72 Ω

29.1 Express 1kWh in Joules?

29.2 Which is the commercial unit of electrical energy ?

Ans : The commercial unit of electrical energy is kilowatt hour (kWh)

1KWh=3,600,000J =3.6×10^6J

30. An electric bulb is connected to a 220V generator.The current is 0.50A. what is the power of the bulb?

Ans : P=VI

P=220X0.50

P=110J/S=110w

31. An electric refrigerator rated 400w operates 8 hour per day .What is the cost of the energy to operate it for 30 days at Rs.3.00 per kWh ?

Ans : The total energy consumed by the refrigerator in 30 days would be,400x8x30 = 96000 Wh =96kWh

The cost of the energy to operate the refrigerator for 30 days is, 96kWhx Rs.3.00 =Rs.288.00

32. An electric motor takes 5A from a220V line. Determine the power of the motor and the energy consumed in 2 hour ?

Ans : V=220V I=5A t= 2h = 2x60x60 =7200s

P=VI =220x5 =1100w

Energy consumed by motor =Pxt =1100 x7200 =7.92×10^6J

33. Give reason :Fuse wire is placed in series with the device.

Ans : Fuse wire is placed in series with the device because when large current passes through the circuit the fuse wire gets heated up and melts and whole circuit breaks and the device is protected from the damage.

Magnetic Effects of Electric Current

1.1 What is meant by magnetic field ?
1.2 Define magnetic field.

Ans : magnetic field is a region around a magnetic material in which the force of magnetism acts.

2.1 On which factor magnetic field depends on ?
2.2 Magnetic field depends on which factor?

Ans : magnetic field depends on density of magnetic field lines.

3.1 On which characteristic features we call it as magnetic field lines ?
3.2 What are the characteristics of magnetic field lines ?

Ans : Field lines are form North pole to south pole.
No two field lines cross each other.
Field lines are denser in poles and lesser in middle.
Field lines have the ability to pass through materials.

4.1 What is meant by electromagnet ?
4.2 How electromagnet is made ?

Ans : If we place a soft iron inside the solenoid having electric current electromagnet is made and this is called electromagnet.

5.1 State right hand thumb rule.
5.2 State the rule which indicates the direction of magnetic field.

Ans : If we hold a current carrying straight conductor in our right hand, thumb points towards direction of current and the left four finger indicates the direction of magnetic field.

6.1 What are the qualities of magnetic field lines inside the solenoid ?
6.2 How was the magnetic field lines inside the solenoid ?

Ans : The field lines inside the solenoid are in the form of parallel straight lines.

7.1 Based on which character solenoid is used as a bar magnet ?
7.2 Why solenoid is used as an bar magnet ?

Ans : Two ends of the solenoid behaves like a North and South poles of the bar magnet. Magnetic field in the same at all points inside the solenoid.

8.1 State Fleming's left hand rule.
8.2 State the law which indicates the direction of current.
8.3 According to Fleming's left hand rule what does the thumb forefinger and middle finger represents ?
8.4 State the law on which electric motor works ?
8.5 Describe Fleming's left hand rule.

Ans : Fleming's left hand rule states that if the fore finger, middle finger and thumb of the left hand are are structured mutually perpendicular thumb points the direction of motion or force acting on a conductor, fore finger points the direction of magnetic field and middle finger points the direction of current.

9.1 Why does the concentric circles becomes big loops in a magnetic field around a current carrying straight wire if it's distance increases ?
9.2 If the concentric circles becomes big loops in a magnetic field around a current carrying straight wire when its distance increases what changes occur in magnetic field ?

Ans : The magnetic field decreases as the distance increases.

10.1 Write the character of magnetic field lines produced in a center of a current through circular loop.
10.2 How was the magnetic field lines produced in a center of a current through a circular loop ?

Ans : Magnetic field appears as straight lines.

11.1 What is meant by Electric motor?
11.2 Define Electric motor.
11.3 Write the function of Electric motor.

Ans : an electric motor converts electrical energy into mechanical energy.

12.1 What is a commutator ?
12.2 Write the function of a commutator.

Ans : A device that reverse the direction of flow of current through a circuit is called as a commutator.

13.1 What is meant by electromagnetic induction ?
13.2 Describe the phenomenon on which the electric generator works ?

Ans : An electric current produced in a closed circuit by a changing magnetic field is called an induced current. This phenomenon is called electromagnetic induction.

14.1 State Fleming's right hand rule.
14.2 Describe Fleming's right hand rule.
14.3 State the law which points the direction of induced current.
14.4 State the law on which electric generator works.

Ans : Fleming's right hand rule states that thumb, fore finger and middle finger of right hand are stretched perpendicular to each other, thumb indicates the direction of motion of conductor, forefinger indicates the direction of magnetic field and middle finger shows the direction of induced current.

15.1 What is meant by electric generator ?
15.2 Write the function of electric generator.

Ans : A device which converts mechanical energy into electrical energy.

16.1 Write the two differences between electric motor and electric generator.
16.2 How electric motor differ from electric generator.

Ans :

Electric Generator	Electric Motor
Works on the basis of Fleming's right hand rule.	Works on the basis of Fleming's left hand rule.
Mechanical energy is converted into electrical energy.	Electrical energy is converted into mechanical energy.

17.1 Draw the neat labelled diagram of electric generator
17.2 Draw the neat labelled diagram of the device which works on the principle of electromagnetic induction.
17.3 Draw the neat labelled diagram of the device which converts mechanical energy into electrical energy.

Ans : Part-1 textbook page number 130 Diagram 13.19

18.1 How much volts of the electricity is supplied for domestic household purpose ?
18.2 What is the potential difference between live wire and neutral wire in our country ?

Ans : 220V

19.1 What is the difference between direct current and alternate current ?
19.2 How direct current is differ from alternate current ?
19.3 Define the following terms.
a) Direct current b) Alternate current

Ans : Direct current always flows in one direction.
Alternate current reverses its direction periodically.

20.1 Draw a neat labelled diagram of electric motor.
20.2 Draw the neat labelled diagram of the device which converts electrical energy into mechanical energy.
20.3 Draw the neat labelled diagram of the device which works on Fleming's left hand rule.

Ans : Part-1 textbook. page number 126. diagram 13.15

21.1 When does overloading happens ?
21.2 Write the reason which causes Overloading ?

Ans : Overloading can occur when the live wire and the neutral wire come into direct contact.
Overloading can also occur due to an accidental hike in the supply voltage.
Sometimes overloading is caused by connecting to many appliances to a single socket.

22.1 Name the device used for protecting the circuits due to short circuiting ?
22.2 Which is the device used to protect the circuits during thundering and strumming ?

Ans : Fuse.

23.1 What is the role of split rings in electric motors?
23.2 Write the function of split rings in a electric motor.

Ans : Split rings act as a commutator in a electric motor.

24.1 Why no two field lines cross each other ?

Ans : If two field lines of each other it mean that at the point of insection, the compass needle would point towards two directions, which is not possible.

25. How does we convert alternate current into direct current ?

Ans : To get a direct current, a split ring commutator must be used.

LIGHT – REFLECTION AND REFRACTION

1. In which direction light ray travels from rarer medium to denser medium ?

Ans : When light ray travels from rarer medium to denser medium ,the rays are bend towards normal.

2. In which direction light ray travels from denser medium to rarer medium ?

Ans : When light ray travels from denser medium to rarer medium ,the rays are bend away from normal

3. State the formula related to Snell's law of refraction.

Ans : The formula related to Snell's law of refraction ;- $\mu = \sin i / \sin r$

3. Name the material medium having highest refractive index .

Ans : The material medium having highest refractive index is Diamond

4. If the power of the lens is -0.25,Calculate its focal length?

Ans : If the power of the lens is -0.25,then its focal length is ($P = 1/f$ $f=1/-0.25=-4$) -4m

5.1 Which material cannot be used among Water, Glass, Plastic and Clay materials, in making a lens?

5.2 Name the materials used to make a lens.

Ans : The material cannot be used among Water , Glass, Plastic and Clay materials, in making a lens is Clay materials.

6. What is the focal length of convex lens is prefered to read minimized letters in dictionary?

Ans : A convex lens of focal length 5 cm is prefered to read minimized letters in dictionary.

7.Statement of laws of reflection.

Ans : a) Incident ray, reflected ray and normal at the point of incidence all lie in the same plane.

b) The angle of incidence is equal to the angle of reflection.

8. Define Refractive Index.

Ans : The ratio between the speed of light in two different medium.

9. Define the unit of power in lens.

Ans : The unit of power of lens is Diopter , is defined as the focal length of lens in a meter.

10. Define Refraction of light.

Ans : Refraction of light is defined as the change in direction of light,when it travels from one medium to another medium.

11. Express an equation between focal length and radius of curvature?

Ans : The relation between focal length and radius of curvature is $f = R/2$

12. What is magnification of lens?

Ans : The ratio of height of the image to the height of the object is called magnification.

13. What is principle axis?

Ans : An imaginary straight line passing through the two centers of curvature.

14. 1. How does Convex lens is different from Concave lens?

2. List the properties of Convex lens.

3. List the properties of Concave lens.

Ans : Edges in convex lens is thin and Centre is thick but Edges in concave lens is thick and Centre is thin

Light rays passes through in convex lens are converging but in concave lens are diverging.

15.1 Give two illustrations on Refraction of light in daily life.

15.2 Give reasons for the scattering of light Before sunrise and After sun set.

15.3 Give reasons for the Formation of Rainbow during rainy season .

Ans : Two illustrations on Refraction of light in daily life.

a) Before sunrise and After sun set scattering of light can be seen

b) Formation of Rainbow during rainy season.

16. Define power of lens. What is the S.I. unit of power of lens?.

Ans : Power of lens is defined as the reciprocal of its focal length. (P = 1/f)

S.I. unit of power of lens is 'diopter'.

17. Draw a ray diagram to show the path of light when it travels through glass slab.

Ans :

Incident ray I enters the glass slab forms an angle of incidence '*i*'. Its bends towards the normal and forms an angle of refraction '*r*'.The emergent ray is parallel to the incident ray.

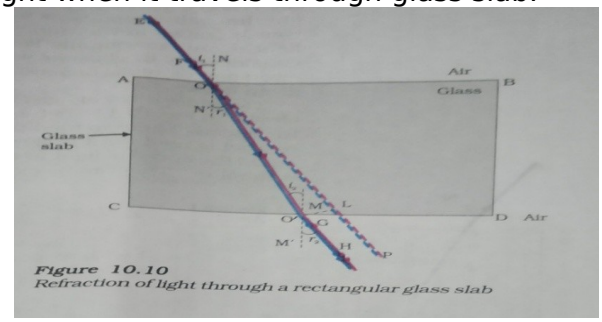


Figure 10.10
Refraction of light through a rectangular glass slab

18. With the help of a ray diagram show the position, size and the nature of the image formed by a convex lens for various positions of the object.

Ans : Reffer Textbook Page No. 90 &91

SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

1.1 The presence of which bacteria indicates pollution of water?
1.2 Name the micro organisms present in human body's Small intestine.
Ans : Coliform bacteria
2. Name the two peoples who get advantages from the forests.
Ans : i) People live around the forest and tribal peoples
ii) Industrialists.
3.1 Name any one micro biodiversity habitat.
3.2 Which natural resource are the 'biodiversity hot spots'
Ans : Forests.
4. Give any two reasons for the failure of sustainable management of ground water.
Ans : i) Use of ground water throughout the year (it is recharged only during rainy reasons)
ii) Rain water technique is not properly implemented.
5. Name any two materials, which can be easily recycled and generally thrown out, as trash.
Ans : Used paper, polythene bags, metal waste, etc
6. What is Rainwater harvesting?
Ans : Collection of rain water through different methods and use throughout the year is called rain waters harvesting.
7. What is sustainable management of natural resources?
Ans : The controlled use of resources in such a way that, its present availability and continuous flow to the future generation is ensured without any disturbance to the environment.
8. Mention any two major benefits of dams.
Ans: i) Implementation of irrigation project. ii) Production of electricity.
9. Why did Amrita Devi Bishnoi scarified her life?
Ans: In 1731, Amrita Devi Bishnoi along with 363 other people scarified their life for the protection of khejri trees in khejrali village near Jodhpur in Rajasthan.
10. Suggest some consequences due to the loss of biodiversity?
Ans : The food chain and food webs will get disturbed. Resources will not be available for the next generation.
11. List two measures that you would suggest for the better management of water resources.
Ans : i). Rain water harvesting ii). Construction of dams.
12. List any four stakeholders, which may help in conservation of forests.
Ans : ♣ Locals living in villages near the forest area
♣ Industrialists practicing recycling.
♣ Wildlife and nature enthusiasts
♣ Forest development of the government.

13. Mention any two reasons for which environmentalist protested against raising the height of "Sardar Sarovar Dam" on river Narmada.
Ans : i) Submergence of additional land
ii) Displacement of more people from their homes and loss of employment.

14. What changes can you make in your habits to become more environmental friendly?
Ans : 1) Check the wastage of water, close the tap properly.
2) Use solar water heater and cookers, install solar panel for electricity.
3) Reduce the garbage by not throwing such items.
4) Switch over to CFL and LED lights to save electricity
5) Use cloth bags instead of polythene bags.

15. Why do we conserve forest and wild life?

Ans : i) Forests are biodiversity hot spots: number of species found in an area measures it.
ii) Forests help in protection of land and retaining soil water.
iii) Forest checks floods and maintain ecosystem.
iv) Wild life is important because They provide great aesthetic value for human beings. v) They help in maintaining ecological balance.

16. Suggest some approaches towards the conservation of forests.

Ans : i) Afforestation – growth of forest in new open area.
ii) Deforestation should be banned.
iii) People should be made more aware about importance of forest
iv) There should be proper law‟s for exploitation of forest resources.
v) Growth of agricultural forest.

17. Reuse is better than recycling of materials give reasons to justify the statement.

Ans : ♣ Reduce is better than recycling because,
i) Reuse of material does not use any energy.
ii) It reduces the stress on environment.
iii) Things are maximally utilized, as they are used again and again, instead of being thrown away.

18. What are 5R practices which protects environment. Explain briefly.

Ans : 1) Refuse 2) Reduce 3) Reuse 4) Repurpose 5) Recycle
1) Refuse: Refuse to buy products that can harm you and the environment. Say no to single use plastic carry bags.
2) Reduce: This means that you use less. You save electricity by switching off. Unnecessary lights and fans. You can save water by repairing leaky taps. Do not waste food.
3) Reuse : This is actually even better than recycling because the process of recycling uses some energy you simply use things again and again. Instead of throwing away used envelopes, you can reverse it and use it again. The plastic bottles in which you buy various food items like jam and pickle can be used for storing things in the kitchen.
4) Repurpose : This means when a product can no more be used for the original purpose, think carefully and use it for some other useful purpose. For eg: Caps with broken handles can be used to grow small plants and as feeding vessels for birds.
5) Recycle: This means that you collect plastic, paper, glass and metal items and recycle these materials to make required things.

19. Why do we need to manage our resources carefully?

Ans : i) These are not continuously available
ii) The demand for these resources keeps on increasing.
iii) These resources also need to be preserved for future generations
iv) These are equally distributed amongst the rich and the poor.

20. Write some of the simple choices that can make a differences in our energy consumption patterns.

Ans: i) Walking / cycling instead of a taking a bus or driving car.
ii) Using stairs instead of a lift to climb up.
iii) Wearing an extra sweater rather than using a heater which runs on electricity.

21. What was “Chipko Andolan” ? How did this Andolan ultimately benefit local people and the environment?

Ans : The movement, which was started in Reni village in Garhwal to protect the trees by hugging them and not allowing cutting of these trees, was called “Chipko Andolan”
i) The chipko movement quickly spread across communities and media and forced the government, to whom the forest belongs, to rethink their priorities in the name of forest produce.

ii) Due to participation of local people, it led to the efficient management of forests.
iii) It explains that the loss of forest is not only influenced on forest product, but also influenced on water reservoirs and quality of the soil.

22. What are the advantages of storage of water under the soil (as ground water)?

Ans : ♣ It does not evaporate.
♣ Spreads to recharge well.
♣ It provides moisture for vegetation over a wide area.
♣ It does not provide breeding grounds for mosquitoes like stagnant water.
♣ It is protected from contamination by human and animal waste.

23. How do we reduce the pressure on the environment.

Ans : By adopting refuse, Reduce, Reuse, Repurpose and Recycle strictly in our day-to-day life.

24. Give one example each from your daily life where the domestic waste can be effectively reused and recycled.

Ans : Reuse: We can reuse the empty bottles of jam, etc. for the storage purposes. Recycle: We can recycle old newspapers, aluminium cans etc.

25. State an instance where human intervention saved the forests from destruction.

Ans : Human intervention saved the Arabari forest range of West Bengal from destruction with active and willing participation of local community, The Sal forest of Arabari underwent a remarkable recovery.

26. Water is a valuable resource. List two ways, that you would suggest every family member to save this resource.

Ans : (i) Turning-off the taps when not in use.
(ii) Checking the leaking water pipelines and getting them repaired.

27. What is Coli form?

Ans : It is a group of bacteria found in human intestine whose presence in water indicates contamination by disease causing micro-organisms.

28. List any two measures that you suggest for better management of water resources.

Ans : (i) Roof top rain water harvesting. (ii) Watershed management.

29.What is meant by three types of 'R' (3-R's) to save the environment? Explain with example how would you follow the 3-R's in your school to save the environment.

Ans : Reduce, Reuse, Recycle (for all the three) I (only '/2 mark if two are mentioned)
Examples: (i) Switch off the fans and bulbs when not in use,
(ii) Reuse of paper, polythene bags, etc.,
(iii) Reduce the wastage of water / paper or any other item

30.Which natural resource are the 'biodiversity hot spots' ? Suggest what happens when there is a loss of biodiversity?

Ans : Forest are the natural resources known as biodiversity hot spots. 'When there is a loss of biodiversity there is a loss of ecological stability.

31.Why are forests considered "biodiversity hot spots"? List two ways in which an individual can contribute effectively to the management of forests and wildlife?

Ans : Biodiversity is measured by the number of different life forms found in an area. In a forest, various species are available which include bacteria, fungi, ferns, plants, nematodes, insects, birds, reptiles and mammals. Forests are therefore, called biodiversity hot spots.
An individual can contribute in management of forest and wildlife by
(i) Avoiding cutting of forest and killing of wildlife.
(ii) Educating people about the importance of forest and wild life in our life.

32.State the main purpose of water harvesting system and also mention the source which fills the pond behind harvesting structures.

Ans : The main purpose of water harvesting system is to help in recharge of ground water. Rain is the source which fills the pond behind harvesting structures.

33.List and explain any two advantages associated with water harvesting at community level.

Ans : Water harvesting at the community level is capturing, collection and storage of rain water and surface run off for filing either small water bodies or recharging ground water. This is carried out through water shed management, check dams, earthen dams, roof top harvesting and filter wells in flood drains.

Benefits: (i) It ensures water availability in non- rainy season.

(ii) Water becomes available for drinking as well as irrigation.

34.1 Why do we seek construction of dams 7 Mention any two problems faced with the construction of large dams?

34.2 The construction of large dams leads to social and environment problems. List two problems of each category.

34.3 Building of big dams gives rise to some problems. List three main problems that may arise. Suggest a solution to any one of these problems.

Ans : Social problems: (i) Many people are rendered homeless.

(ii) Displacement of large number of tribals without due compensation.

(iii) Migration into the cities for settlements.

Environmental problems: (i) Deforestation / loss of biodiversity

(ii) Soil erosion / ecological imbalance

35. i) Why is reusing even better than recycling ? List any two reasons.

(ii) Give any three examples of human activities leading to destruction of forests.

Ans : (i) Reusing is even better than recycling because the process of recycling uses some energy. In the 'reuse' strategy, you simply use things again and again, without using any energy for generating something new

36. What changes would you suggest in your home in environment-friendly?

Ans : (i) Use three R's in your lifestyle

(ii) Save electricity by turning off lights when not in use.

(iii) Plant more and more trees.

(iv) Use cloth bags in place of polythene and plastic bags.

37. Can you suggest some changes ii your school that would make it environment-friendly?

Ans : (i) Maintaining eco clubs.

(ii) Conducting inter house debates and painting competition emphasizing the role of students in preserving and conserving environment.

(iii) Planting trees in the campus.

38. A student studies that construction of a water harvesting system in a region can help conserve water. How can construction of this system help a region?

(a) it will reduce the occurrence of droughts

(b) it will reduce the percolation of rainwater

(c) it will replenish surface water like rivers

(d) it will increase the speed of flow of surface runoff

Ans : Option (a) it will reduce the occurrence of droughts

39. A student studies that conservation of forest is necessary to maintain ecological stability. This can only be maintained if forests are conserved. Which of these practices will help to conserve the forest?
(a) practice of deforestation
(b) putting a ban on deforestation
(c) an increase in use of firewood by local people
(d) an increase in use of forest product by industries

Ans : Option (b) putting a ban on deforestation

40. Which of these would be identified as a stakeholder involved in a forest?
(a) industries who make ceramic products using clay
(b) industries who make papers using wood products
(c) industries who make clothes using synthetic materials
(d) industries who make devices that generate electricity using solar energy

Ans : Option (b) industries who make papers using wood products

41. Which of these is an example of sustainable development in order to conserve natural resources for the future generation?
(a) cleaning water resources
(b) finding alternate fuel reservoirs
(c) clearing forests to set up new industries
(d) planning for safe disposal of wastes after mining

Ans : Option (d) planning for safe disposal of wastes after mining

42. Which of these practices can be adopted to save the environment?
(a) refuse the use of single-use plastic bags
(b) reduce the use of paper bags
(c) recycle single-use bags
(d) reuse waste food

Ans : Option (a) refuse the use of single-use plastic bags

43. A student studies that we should switch off unnecessary lights and fans in order to save the environment. How does switching off unnecessary electrical appliances help the environment?
(a) it reduces the wastage of energy (b) it generates electricity when switched off
(c) it recycles the amount of energy used (d) it increases the efficiency of the electrical appliances

Ans : Option (a) it reduces the wastage of energy

44. Opposition to the construction of large dams is due to :
a) Social reasons b) economic reasons
c) Environmental reasons d) All of the above

Ans : d)All of the above

45.Tehri dam is build over which of the following river?
a) Kaveri b) Narmada c) ganga d) Mahanadi

Ans : c) ganga

46. Khadins, Bundhis, Ahars and Kattas are ancient structures that are examples for:
a) Grain storage b) wood storage
c) Water harvesting d) soil conservation

Ans : c) Water harvesting

46. Expand GAP:
a)Government Agency for Pollution control b) Gross Assimilation by Photosynthesis
c) Ganga Action Plan d) Governmental Agency for Animal Protection

Ans : c) Ganga Action Plan

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SOURCES OF ENERGY

ONE MARK QUESTIONS:

1.1 What is a good source of energy?
1.2 What is a good fuel?
1.3 What are the qualities of an ideal source of energy?

Ans : A good source of energy would be one,
(i) which would do a large amount of work per unit volume or mass.
(ii) Be easily accessible
(iii) be easy to store and transport and
(iv) perhaps most importantly be economical.

2.1 If you could use any source of energy for heating your food, which one would you use and why?
2.2 Which source of energy is good for cooking at home?
2.3 Why natural gas is good for cooking?

Ans : Natural gas can be used for heating and cooking food as it is a clean source of energy. It has high calorific value also it does not produce a large amount of smoke on burning.

3.1 What are conventional sources of energy with example?
3.2 Define conventional sources of energy. Give an example

Ans : Conventional sources of energy have been in use for a long time. Coal, petroleum, natural gas and electricity are few conventional sources of energy.

4.1 Name the energy sources used in ancient times.
4.2 What are energy sources used in ancient times?

Ans : Wood, flowing water and wind was used in ancient times for different purposes.

5.1 What causes the increase in the demand of energy sources?
5.2 What makes the increase in the demand of energy sources?

Ans : Increasing industrialization has led to a better quality of life all over the world. It has also caused the global demand for energy to grow at a tremendous rate.

6.1 How can we reduce the pollution caused by burning fossil fuels?
6.2 Mention the ways to reduce the pollution caused by burning fossil fuel?

Ans : We can reduce the pollution by increasing the efficiency of the combustion process and using various techniques to reduce the escape of harmful gases and ashes into the surroundings.

7.1 What is Bio-mass?
7.2 Define bio mass.

Ans : The plant and animal products which are used as fuels are called Bio-masses. Examples, wood, cow-dung, etc.

8.1 What is wind energy?
8.2 Define wind energy.

Ans : Wind energy is the kinetic energy associated with the movement of large masses of air.

9.1 How wind energy was used in the past?
9.2 Explain the ways to which wind energy is used.

Ans : The kinetic energy of wind was harnessed by wind mills in past to do mechanical work. For example, in the water - lifting pump, the rotatory motion of wind milk is used to lift water from the well. Wind energy is also used to run flour mill and sawing wood before modern times.

10.1 What kind of mirror- concave, convex or plain - would be best suited for use in a solar cooker? Why?
10.2 Which mirror used in solar cookers?
10.3 Why concave mirror used in solar cooker?

Ans : A concave mirror is used in solar cooker because it converges light rays coming from infinity to point so that more heat is produced at the point sufficient to cook the food.

11.1 What is solar cell?
11.2 The device that convert solar energy into electrical energy is called_____.

Ans : The device that converts solar energy directly into electrical energy is called solar cell.

12.1 What is tidal energy?
12.2 Define tidal energy.
12.3 Is tidal energy used to produce electrical enegy?

Ans : Tidal energy is a form of hydropower that converts the energy obtained from tides into useful forms of power, mainly electricity.

13.1 What is wave energy?
13.2 Define wave energy.
13.3 Can we produce electricity by huge waves?

Ans : The energy possessed by huge waves near the sea-shore can be trapped to generate electricity. This is called wave energy.

14.1 What is geothermal energy?
14.2 Define geothermal energy.
14.3 Geothermal energy trapped within _____ km.

Ans : The heat energy trapped within 10 km. of the Earth's crust is known as geothermal energy. Or geothermal energy is thermal energy generated and stored in the earth.

15.1 What are hot spots of the earth?
15.2 Define hotspots of the earth.
15.3 Where we can produce geothermal energy in the earth?

Ans: Molten rocks formed in the deeper hot regions of the earth's crust are pushed upward & trapped in certain regions on the earth are called 'hot spots'

16.1 What are hot springs?
16.2 How hot springs are produced?

Ans : When underground water comes in contact with the hot spot, steam is generated. Sometimes hot water from that region finds outlets at the earth's surface. Such outlets are known as hot springs.

17.1 Mention the principle on which a nuclear reactors work.
17.2 Write the principle on which a nuclear reactors work?
17.3 Name the principle on which a nuclear reactors work?

Ans : The nuclear reactors work on the principle of "controlled chain reaction" of nuclear fission.

18.1 What are non-renewable sources of energy?
18.2 Define exhaustible sources of energy.
18.3 What are exhaustible sources of energy?

Ans : The energy sources that will get depleted someday are said to be exhaustible sources or non-renewable sources of energy.

19.1 What are renewable sources of energy?
19.2 Define non exhaustible sources of energy.
19.3 What are non-exhaustible sources of energy?

Ans : The energy sources that can be regenerated are called renewable sources of energy.

20.1 What is the need for conserve the fossil fuels?
20.2 Why we have to conserve the fossil fuel?
20.3 'We have to conserve fossil fuel', explain with reason.

Ans : Fossil fuels were formed over millions of years ago and there are only limited reserves. The fossil fuels are non-renewable sources of energy, so we need to conserve them. If we were to continue consuming these resources at such alarming rates, we would soon run out of energy! In order to avoid these alternate energy source were explored.

21.1 What are the environmental impact of burning the fossil fuels?
21.2 What are the disadvantages of fossil fuels?
21.3 Write effects of burning the fossil fuel?
21.4 'Burning of fossil fuel causes pollution', explain with reason.

Ans : The disadvantages of burning fossil fuels causes air pollution. When we burn fossil fuels such as coal and petroleum products, it releases oxides of carbon, nitrogen and sulphur that are acidic oxides. These lead to acid rain and greenhouse effect.

22.1 Why are we looking at alternate sources of energy?
22.2 What makes to see at alternate sources of energy?
22.3 'In future we have to adopt alternate sources of energy', explain with reason.

Ans : The conventional sources of energy that are being used for a long time, such as coal, petroleum and natural gas are non-renewable. We are using them so extensively that their reserves are depleting at faster rate. At the same time, it is becoming very difficult to discover new deposits. So the need of the day is to look for alternate sources of energy.

23.1 How the thermal power plant works?
23.2 Explain the working condition of thermal plants.
23.3 How energy is produced in thermal power plants?

Ans : Large amount of fossil fuels are burnt in power station to heat up water to produce steam which further runs the turbine to generate electricity in the generator. The term thermal power plant is used since fuel is burnt to produce heat energy which is converted into electrical energy.

24.1 How hydro power plants are advantageous than other traditional sources of energy?

24.2 Is hydro power plants are useful than other traditional sources of energy? How?

Ans : Since the water in the reservoir would be refilled each time during rainy season. We would not have to worry about hydroelectricity sources getting used up as in the case of fossil fuels. Water once used in the power plants can be used for agriculture and other activities.

25.1 Why people oppose the construction of big dams?

25.2 Environmentalist protest the construction of dams. Why?

25.3 What are the problem of arises on construct dams?

Ans : The construction of big dams creates the problem of satisfactory rehabilitation of displaced people. Opposition to the construction of Tehri Dam on the river Ganga and Sardar Sarovar project on the river Narmada are due to such problems.

26.1 How electricity is generated in wind mill?

26.2 Explain the process of energy production in wind mills.

Ans : Wind mill consists of a large fan that is erected at some hilly regions where wind blows for greater part of the year. As the turbine of the wind mill is made to rotate by wind energy, the armature of the generator rotates in the magnetic field. This leads to the production of electricity.

27.1 How has the traditional use of wind and water energy been modified for our convenience?

Ans : The kinetic energy of wind was traditionally used to do mechanical work like pulling water from a well or lifting. Nowadays, we can generate electricity using windmills.

The potential energy of stored water at a height and kinetic energy of flowing water were traditionally used to do mechanical energy. Nowadays, hydroelectric power stations are built to make use of the energy of water to generate electricity.

28.1 Describe a solar cell.

28.2 How do you get a desired voltage of electricity from solar cell?

Ans : A solar cell actually consists of a thin piece of special grade silicon which absorbs light energy from the sun. Silver is used for interconnection of the cells in the panel further ads to the cost. So the entire process of manufacture is still very expensive. In spite of the high cost, the efficiency of the solar cell is low. A typical solar cell produces voltage of 0.5V & 0.7W of electricity when exposed to the sun. Silicon piece develops a small voltage across its surface when light falls on it. A large number of such silicon cells are arranged in series in a panel to obtain the desired voltage. Such a group of solar cells connected in series is called "solar panel".

29.1 What are the advantages of solar cells?

29.2 Write the uses of solar cells?

Ans : (i) Solar device require little maintenance. (ii) Another advantage is that solar panels can be set up in remote and inaccessible hamlet or very remote villages in which laying of a power transmission line may be expensive and not commercially viable.

30.1 List two limitations of solar cells.
30.2 Write the limitations of solar cells.
30.3 What are the limitations of solar cells?

Ans : Solar cells have the following limitations; (i) Solar cells are very costly. The domestic use of solar cells is however, limited due to its high cost. (ii) Solar cells have very low efficiency.

31.1 Mention the uses of solar cells.
32.2 Write the uses of solar cells?

Ans: (i) Solar cells are used for many scientific and technological applications.
(ii) Artificial satellites and space probes like Mars Orbiters use solar cells.
(iii) Radio or wireless transmission systems or T.V. relay stations in remote locations use solar cells.
(iv) Traffic signals, calculators and many toys are fitted with solar cells.

33.1 How can we harness the tidal energy?
33.2 How tidal energy is produced?
33.3 Explain the production of tidal energy?

Ans : Tidal energy is harnessed by constructing a dam across a narrow opening to the sea. A turbine is fixed at the opening of the dam converts tidal energy to electricity.
Note :-(i) The first tidal energy plant is built in La Rance, France. The largest tidal plant is the Sihwa Lake Tidal Power Station in South Korea.

34.1 How do you say that “wave energy is more reliable than wind energy”?
34.2 ‘Wave energy is more reliable that wind energy’, explain?

Ans : In spite of many limitations wave energy is considered as more reliable energy source than wind energy. Because the fluctuations are comparatively less in wave energy.

35.1 How is electricity produced from geothermal energy?
35.2 Explain the production electricity from of geothermal energy.

Ans : When water comes in contact with hot spots, it gets into steam. The steam trapped in the rocks is taken out through a pipe to the turbine of the generator and used to generate electricity.

36.1 Where are geothermal power plants established on the earth?
36.2 Name the countries were geothermal power plants are established.

Ans : There are number of power plants which generate electricity on geothermal energy. The major two such plants are in New Zealand and United State of America.

37.1 What is nuclear power plant? How does it work?
37.2 Explain the mechanism of working of nuclear power plant?

Ans : A nuclear reactor which is used to generate electricity is called nuclear power plant. In nuclear power plant, heat generated by nuclear fission reaction is removed by water and the resulting steam is used to run a large turbine which is connected to a generator where electricity is produced.

38.1 What are the advantages of nuclear energy?
38.2 Write the uses of nuclear energy.
38.3 Is nuclear energy is useful than other energy sources?

Ans : As nuclear energy source do not produce any greenhouse gases, it is safe for the environment if managed properly. OR The generation of electricity through nuclear energy reduces the amount of energy generated from fossil fuels. Less use of fossil fuels means lowering greenhouse gas emission.

39.1 Can any source of energy be pollution free? Why or why not?
39.2 Name the pollution free sources of energy.

Ans: No source of energy can be called pollution-free, because, the use of any source of energy disturbs the environment in one way or the other. A source of energy like a solar cell is pollution free in actual operation but the assembly of the device might have caused some damage to the environment.

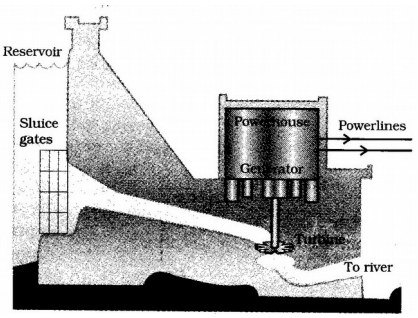
40.1 Hydrogen has been used as a rocket fuel. Would you consider it a cleaner fuel than CNG? Why or why not?
40.2 Is hydrogen is clearer fuel than CNG? Explain.

Ans : No doubt hydrogen gas is cleaner fuel than CNG as CNG contains hydrocarbons. Which contains carbon and it is a form of pollutant present in CNG. But hydrogen is waste-free. The fusion of hydrogen does not produce any waste. Therefore, hydrogen is cleaner than CNG.

<u>THREE MARKS QUESTIONS:</u>

41.1 How hydro power plants work?
41.2 Explain the working process of hydro power palnts.
41.3 Explain the production of electricity in hydro power plants?

Ans : Hydro power plants are associated with dams. In order to produce hydroelectricity, high rise dams are constructed. In the last century, a large number of dams were built all over the world to generate electricity. In dams flowing water is collected in large quantity. As the water level rises in the dam it possess potential energy. The water from the high level in the dam is carried through pipe, to the turbine, at the bottom of the dam. The turbine rotates and potential energy of falling water is converted into electricity by using electromagnetic induction principle.



42.1 What are the disadvantages of Hydro power plants?
42.2 Write the disadvantage of hydro power plants?
42.3 'Construction of big dams have certain problems', explain with examples.

Ans : Construction of big dams have certain problems with it. The dams can be constructed only in a limited places, preferably in hilly regions. Large areas of agricultural land, human habitation and forests are get submerged by water. Thereby large eco-systems are destroyed when submerged under the water. The submerged vegetation rots under water and produces large amount of methane gas, which is also a green-house gas. It creates the problem of satisfactory rehabilitation of displaced people.

43.1 Explain the better way of using wood and cow-dung as fuels.
43.2 How can we use wood and cow-dung as fuel?
43.2 'In villages wood and cow dung use as fuel', how?

Ans : Wood and cow-dung as raw, do not produce much heat on burning and lot of smoke is produced when they are burnt. Therefore, technological ways to improve their efficiency are necessary. (i) When wood is burnt in the limited supply of oxygen charcoal is produced. It burns without flames, is comparatively smokeless and has high heating efficiency. (ii) Similarly, cow-dung, can burn as a fuel and gives less heat. But when cow-dung is decomposed in the absence of oxygen to give Bio-gas. It is an excellent fuel as it contains nearly 75 % of Methane. It burns without smoke, leaves no residue like ash as in the case of wood. Its heating capacity is high. Bio-gas is also used for lighting. The large scale utilization of bio-waste and sewage material provides a safe and efficient method of waste-disposal besides supplying energy and manure.

44.1 What are the limitations of wind mills?
44.2 Write the disadvantages of wind mill.
44.3 We cannot produce wind energy in all places, explain with examples
44.4 Why wind energy cannot be produced in hilly regions?

Ans : The output of a single windmill is quite small and cannot be used for commercial purposes. It needs wind energy farm which covers large area to establish. It can only be established, where wind blows for the greater part of a year. The wind speed should also be more than 15 Km/ Hour. Furthermore, There should be some back-up facilities (like storage cells) to supply electricity during a period when there is no wind. Establishment of wind energy farms require larger area of land. (For example, 1 MW generator, the farm needs about 2 hectares of land). Moreover, since the tower and blades are exposed to the varieties of environmental conditions such as rain, sun, moisture, storm and cyclone, they need a high level of maintenance.

45.1 How an ocean-thermal-energy-conversion plant works?
45.2 How ocean thermal energy is produced?

Ans : The water at the surface of the sea or ocean is heated by the sun while the water in deeper sections (2 Km deep) is relatively cold. This difference in the temperature is used to obtain energy in ocean-thermal-energy-conversion plants.

OTEC uses the warm surface water with a temperature of around 20^0 C is used to boil a volatile liquid such as Ammonia. The vapors of the liquid make a turbine to rotate and generate electricity. The bigger the temperature difference, the higher the efficiency.

46.1 What are the limitations of the energy that can be obtained from the oceans?
46.2 Write the disadvantages of ocean thermal energy?
46.3 Mention the limitations of the ocean thermal energy?

Ans : Tidal energy, wave energy and ocean thermal energy are various forms of energy that can be obtained from the sun. But there are several limitations to harness these energies. Those limitations are- (i) High dams are required to build to convert tidal energy into electricity which incurs lot of cost. (ii) Very strong waves are required, to generate electricity which are not possible all the

time. (iii) Tidal energy depends on the relative position of the earth, moon and the sun. (iv) To harness ocean thermal energy the difference in the temperature of surface hot water and the cold water at depth must be 20 ^{0}C or more.

47.1 What are the major hazards of nuclear power generation?
47.2 Write the problems arises of nuclear power plants?
47.3 How disposal of used fuel in nuclear power plants takes place?

Ans : The major hazard of nuclear power generation is the storage and disposal of spent or used fuels -the Uranium still decaying into harmful radiations. It results in environmental contamination. Further, there is a risk of accidental leakage of nuclear radiation. The high cost of installation of a nuclear power plant is another limitation. The limited availability of uranium makes large-scale use of uranium energy prohibitive.

48.1 What are health hazards of nuclear radiations?
48.2 'Radiations are harmful to humans', explain.

Ans : Radioactive radiations are hazardous to human health if adequate precautions are not taken while handling them. Exposure to these radiations especially Gamma Rays can cause mutation in the living cells and can damage D.N.A molecules. Certain types of cancer and hereditary disorders are caused by ionizing radiations. The materials left out after their use in nuclear reactor consists of a large number of radioactive elements. Unless they are properly disposed, they cause potential hazard to future generation for a very long time to come. Lead jackets are necessary for the workers in the nuclear laboratories.

49.1 Name two energy sources that you would consider to be renewable. Give reasons for your choices.
49.2 Give two example for renewable resources.
49.3 Explain with example for renewable resources.

Ans : Two renewable sources of energy are - (i) Sun: The energy derived from the sun is known as solar energy. Solar energy is produces by the fusion of hydrogen into helium, fusion of helium into other heavy elements, and so on. A large amount of hydrogen and helium is present in the sun. The sun has billions years more to burn. Therefore solar energy is renewable source of energy. (ii) Wind: Wind energy is derived from fast blowing air. Wind energy is harnessed by wind mills in order to generate electricity. Air blows because of uneven heating of the earth. Since the heating of the earth will continue forever, therefore wind energy will also be available forever.

50.1 Give the names of two energy sources that you would consider to be exhaustible. Give reasons for your choices.
50.2 Explain exhaustible energy resources with examples?
50.3 Why some resources called exhaustible?

Ans : Two exhaustible energy sources are as follows :- (a) Coal: - It is produced from dead remains of plants and animals that buried under the earth's crust for millions of years ago. It takes millions of years to produce coal. It means coal cannot replenish within a short period of time. So it is a non renewable or exhaustible sources of energy. (b) Petroleum: - It is also produced in the earth crust by the dead and buried remains of the plants of remote past. It takes millions of years to replenish if exhausted. So it is non renewable or exhaustible resource of energy.

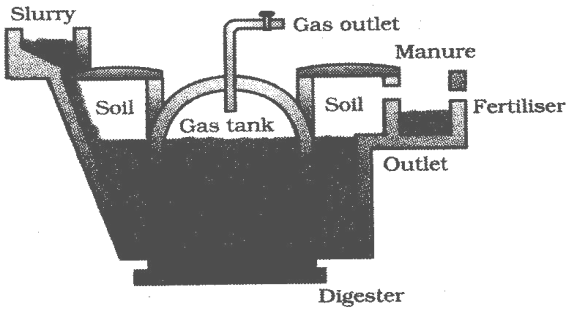
FOUR MARKS QUESTIONS:

51.1 Write the schematic diagram of a bio-gas plant and explain the process of production of bio-gas.

51.2 With neat labeled diagram explain the bio gas plant and production of bio gas.

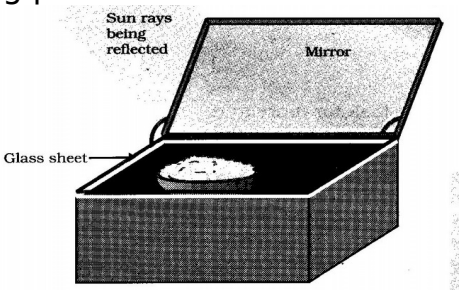
51.3 Write the functions of the parts of bio gas plants with diagram.

Ans : When cow-dung, agricultural waste, vegetable waste and sewage are decomposed in the absence of oxygen a combustible gas called Bio-gas or gobar-gas is produced. The bio-gas plant has a dome-like structure built with bricks. A slurry of cow-dung and water is made in the mixing tank from where it is fed into the digester. The digester is a sealed chamber in which there is no oxygen. Anaerobic micro-organisms present in the chamber decomposes the cow-dung slurry and generate gases like Methane, Carbon dioxide, hydrogen and hydrogen sulphide. The evolved gases are collected in the gas tank above the digester from which they are drawn through pipes for burning. Here, the gas evolved is combustible and the slurry comes out of the plant is as excellent manure which is rich in nitrogen and phosphorous.



52.1 With the help of a neat diagram, explain the construction and working of solar cooker.

52.2 Explain the working process of solar cooker with its parts.



Ans : A box-type solar cooker consists of a rectangular box made of an insulated material such as wood. The inside of the box is painted black to better absorption of heat. The energy of the sun is trapped inside the box by using a plane reflector. The reflector is fixed on the inner surface of the lid of the box. An air-tight glass sheet is placed over the box to create greenhouse effect.

The food to be cooked is placed inside the box in a vessel painted black from outside. The box is covered with the glass plate. The cooker is placed in the sun. The mirror on the inner surface of the lid is given a suitable tilt to ensure that the solar radiation is directed into the box. The heat trapped inside is not allowed to escape. This increase the temperature inside the box and the food gets cooked due to the heat trapped inside the box.

CHEMISTRY

ACIDS BASES AND SALTS

1.1 what happens when a solution of an acid is mixed with a solution of a base in a test tube?

1.2 What happens when neutralization takes place ?

Ans : temperature increases and salt formation takes place.

2.1 write these in terms of hydronium (H_3O^{+}) ion strength . hydrochloric acid, **w**ater & acetic acid

2.2 which one of the above solution has high hydronium ion strength .

Ans : water< acetic acid< hydrochloric acid

3.1 what is formed when zinc is reacts with sodium hydroxide

Ans : $Zn + 2NaOH \longrightarrow Na_2ZnO_2 + H_2$

4. What is universal indicator? What is the pH range of universal indicator?

Ans : Universal indicator is the mixture of synthetic indicators. which is used to find pH of solutions range 0-14

5. Which bases are called alkalis? Give an example of alkalis.

Ans : Soluble bases are called alkalis .examples KOH and NaOH

6. Name the gas usually liberated when a dilute acid reacts with a metal. What happens when a burning candle is brought near this gas?

Ans : Hydrogen gas is liberated. It burns with pop sound when burning candle is brought near the gas.

7. Name the hardest substance in human body. Tooth Enamel is made up of which salts?

Ans: Tooth enamel (calcium phosphate)

8. There are two jars A&B containing food materials. Food in the jar A is pickled with acetic acid while B is not. Food of which jar will stale first? Explain.

Ans: Food in a jar B will stale 1st because it will undergo oxidation and will also be attacked by micro organisms.

9. a) Mention the correct method to dilute sulfuric acid.
   b) Is it exothermic or endothermic reaction ?
   c) What is dilution?

Ans: The acid is to be added slowly in water to prevent the mixture to be splashed the reaction is highly exothermic. Therefore constant cooling should be done. The process is called dilution .

10. What are strong and weak acids? Give three examples for each.

Ans: Strong acids are those acids which are completely ionized in aqueous solution.
Weak acids will partially ionize in aqueous solution.
Strong acids are HCl, HNO_3 H_2SO_4.
Weak acids are citric acid, acetic acid ,formic acid.

11. a) Write an equation to show that the non metallic oxides are acidic in nature.
    b) Non metallic oxides are acidic in nature. justify.
    c) Can we call the above reaction to be neutralization reaction?

Ans: From the above equation we can come to know that non metallic oxide have acidic nature because it reacts with basic calcium hydroxide to give salt and water.
Neutralization reaction.

12. Draw the neat labeled diagram to show or identify that all the compounds having hydrogen are not acids.

Ans : Reffer Textbook Page No. 19

13. Draw the diagram of an experiment showing reaction of an acid with a metal.

Ans : Reffer Textbook Page No. 19

14. a) The pH values of one mole of gastric juice and one mole of pure water are 1.2 and 7.4 respectively. how do we identify the solution of mixing these two is acidic or basic using Litmus paper dipped in it.

b) Which Litmus Paper is used for knowing the real nature of this solution?

Ans: If one mole of pure water is added to one mole of gastric juice, it is diluted but not neutralized. it shows the acidic nature.

Blue Litmus turns into Red color.

15. A student 'X ' says that the concentration of acid and base can be identified using Litmus Paper. Justify whether this statement is true or false?

Ans: Litmus Paper is used to know the acidic or the basic nature of the solution but not its concentration. The Universal indicator pH paper is used to know its concentration.

16. Which one is not a base among the following ? Identify and give reason.

NaOH, KOH, NH_4OH, C_2H_5OH

Ans: C_2H_5OH is not a base. It is an organic compound slightly acidic in nature. it would not produce OH^- ions in the solution.

17. a) Write the reaction when inorganic acids soluble or dissolve in water.

b) Mention hydronium ion (formula of hydronium ion).

c) What do you mean by dilution of solution?

Ans: When acid dissolves in water, it decomposes to produce H^+ ions which combine with H_2O to produce H_3O^+ ions.

18. a) Give examples for basic salts.

b) Sodium carbonate is a basic salt . Give reason.

c) Can we say that the basic salts are produced due to neutralization reaction?

Ans: Sodium carbonate is a basic salt. it is formed by the reaction of weak acid and strong base.

19. a) Mention the effects of neutralization reaction.

b) What we call for the phenomenon of addition of acid to a base ?

Ans : Heat is released along with the production of salt.

20. a) What are acids? give examples.

b) Which are the properties of acids? give examples for acids.

c) What type of solutions have the properties of turning blue Litmus into red having sour taste and the pH value less than 7 ? give examples for such type of solution.

Ans : The chemicals which release hydrogen ions in their solution form having sour taste and turning blue Litmus into red are called acids.

For example: hydrochloric acid, nitric acid, citric acid, acetic acid…

21. a) What are strong acids and weak acids? give examples.

b) Differentiate between strong acids and weak acids.

c) How does strong acids differ from weak acids?

Ans : If hydrogen ion concentration is more, then they are called strong acids.

For example : hydrochloric acid, sulphuric acid , nitric acid, carbonic acid.

If the hydrogen ion centration is less, then they are called weak acids .

For example: acetic acid, Tartaric acid, ascorbic acid, methanoic acid and citric acid...

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METALS AND NON-METALS

1. Name the metals melt at body temperature among gallium, magnesium, cesium and aluminum

Ans : Gallium and cesium melt at body temperature.

2. Name two metals which react with dil.HNO 3 to evolve hydrogen gas.

Ans : Manganese (Mn) and magnesium (Mg) .

3. Arrange the following metals in the decreasing orde r of reactivity Na, K, Pb, Cu, Fe and Ag.

Ans : The decreasing order of reactivity of the given metals is K> Na> Fe > Pb > Cu > Ag.

4. Name the lustrous nonmetal.

Ans : Iodine

5. Name the metals which forms the amphoteric oxides.

Ans : Zinc and Aluminium .

6. How do metals and non-metals combine?

Ans : Metals and non-metals combine by the transfer of electrons from metals to non-metals to form ionic bonds.

7. Name a solvent in which electrovalent compounds are soluble and a solvent in which they are insoluble.

Ans : Water is a (polar) solvent in which electrovalent compounds are soluble and Kerosene, benzene, petrol are organic or non-polar solvents in which they are insoluble.

8. Name one metal which reacts neither with cold water, nor with hot water, but reacts with steam to produce hydrogen gas.

Ans : Iron is the metal which does not react with cold and hot water but reacts with steam to produce hydrogen gas.

9. A piece of granulated zinc was dropped into copper sulphate solution. After sometime, the colour of the solution changed from blue to colourless. Why?

Ans : Blue copper sulphate is converted to colourless zinc sulphate, as zinc, being more reactive, displaces copper from CuS0 4 solution and forms a colourless solution of zinc sulphate.

10. Why does calcium floating water?

Ans : Calcium reacts with water to form hydrogen gas. Although, calcium is heavier than water, but due to the sticking of the H 2 gas bubbles on calcium metal surface, it starts floating.

11. A green layer is gradually forme d on a copper plate when left exposed to air for a week. Mention the chemical composition of the substance.

Ans : This green substance is basic copper carbonate CuCO 3.. Cu(OH) 2 .

12. Name two metals that are obtained by electrolysis of their chlorides in molten form.

Ans : Sodium and calcium are obtained by electrolysis of their chlorides in molten form.

13. a) Name an alloy which has mercury as one of its constituents.
b) Name a metal which -
(i) Is a bad conductor of heat.
(ii) Does not react with oxygen even at high temperature.
(iii) is most ductile

Ans : a) Zinc amalgam is an alloy that has mercury as one of its constituents.
b) (i) Mercury
(ii) Gold
(iii) Gold

14. Give reason for the following:
(i) temple bells are made up of metals.
(ii) Electrical wires are made up of copper.

Ans : A) Metals are sonorous (produce sound on being hit), so bells are made up of metals.
B) Copper is a very good conductor of electricity. So, it is used for making electrical wires.

15. A non-metal X exists in two different forms M and N. M is hardest natural substance, whereas N is a good conductor of electricity. Identify X, M and N.

Ans : Non-metal X is carbon (C).
Carbon exists in two different forms called the allotropes of carbon. These allotropes are diamond and graphite.
M is diamond because diamond is the hardest natural substance and N is graphite which is a good conductor of electricity.

16. Explain electrolytic reduction? How is sodium obtained from its molten chloride?

Ans : In electrolytic reduction, the metals are extracted by the electrolysis of their salts.
Sodium obtained by the electrolysis of molten NaCl.
The Na is deposited at the cathode and chlorine is liberated at the anode.

At anode – Oxidation: $2\,Cl^- \longrightarrow Cl\,2 + 2e^-$
At cathode – Reduction: $Na^+ + e^- \longrightarrow Na$
Overall Reaction: $NaCl \longrightarrow Na+ + Cl^-$

17.1 Write differences between roasting and calcination.
17.2 How Calcination is differ from Roasting ?

Roasting	Calcination
Roasting It is the process in which a sulphide ore is heated below its melting point in the presence of excess air to convert it into metal oxide	Calcination It is a process in which a carbonate ore is heated below its melting point in the absence of air to convert it into metal oxide.
Ex: $ZnS + 3O_2 \longrightarrow ZnO + SO_2$	Ex : $ZnCO_3 \longrightarrow ZnO + CO_2$

18. What is thermite reaction? Explain with an example.

Ans : The reaction of metal oxide to form metal by using aluminum powder as a reducing agent is known as thermite reaction.
The amount of heat produced is so high in this reaction. Hence the metals are produced in the molten state. The reaction of iron(III)oxide (Fe_2O_3) with aluminum to produce iron in molten state. It is used to join railway tracks or cracked machine parts. Hence called thermite welding.

$Fe_2O_3(s) + 2Al(s) \longrightarrow 2Fe(l) + Al_2O_3(s) + Heat$

19. What is an alloy? Give example

Ans : An alloy is a homogeneous mixture of two or more metals or a metal and a non-metal. It is prepared by mixing the metals in molten form and then cooling the mixture.

Ex : Solder- (lead and tin)
Bronze - (Cu and Sn)
Brass - (Cu and Zn)

20. What is amalgam?

Ans : If an alloy of metal with mercury is called amalgam,
Ex: sodium- amalgam, silver- amalgam etc.

21. Write important properties of alloy.

Ans: The electrical conductivity and melting point of an alloy is less than that of pure metals. Can change the metallic property by adding various components like metals and non-metals.

22. What is reactivity series? Write the orde r of reactivity series of metals.

The reactivity series is a list of metals arranged in the order of their decreasing activities.

Ans : K > Na > Ca > Mg > Al >Zn > Fe >Sn > Pb >H > Cu > Hg > Ag > Au

23. What are amphoteric oxides? Give two examples to show their amphoteric nature of Al_2O_3.

Ans : The metallic oxides which show the properties of acids as well as bases are called amphoteric oxides.
It means that they react with both bases and acids to form salt and water.
Ex: ZnO and Al_2O_3

$Al_2O_3 + 6HCl \longrightarrow 2AlCl_3 + 3H_2O$

$Al_2O_3 + 2NaOH \longrightarrow 2NaAlO_2 + H_2O$

24. Name two metals which will displace hydrogen from dilute acids, & two metals which will not.

Ans : Zinc and magnesium displace H_2 (which are above in the reactivity series) from dilute acids while copper and silver do not (as they are below in the reactivity series)

25. Name two metals which are found in nature in the native state.

Ans : Gold and platinum are the two metals that are found in nature in native state.

26. Why do ionic compounds have high melting points?

Ans : Ionic compounds have strong electrostatic forces of attraction between the oppositely charged ions. Hence they have high melting point and boiling points as more energy is required to break these strong electrostatic forces of attraction.

27. Define - (i) Mine ral (ii) Ore (iii) Gangue.

Ans : The naturally occurring elements or compounds of metals present in the earth's crust are called minerals.
Ores are those minerals from which a particular metal can be extracted profitably.
The impurities present in the ore are called gangue.

28 Schematically represent the formation of NaCl

Reffer Textbook Page No : 47

29 Draw labeled diagram to show the action of steam on metals.

Reffer Textbook Page No : 43

30. Draw labeled diagram of testing the conductivity of a salt solution.

Reffer Textbook Page No : 48

31 Explain the process of electrolytic refining for copper with the help of a labeled diagram.

Ans : For Diagram Reffer Textbook Page No : 47
In electrolytic process, the impure metal is made the anode and a thin strip of pure metal is made the cathode.
A solution of the metal salt is used as an electrolyte. On passing the current through the electrolyte, the pure metal from the anode dissolves into the electrolyte. An equivalent of pure metal from the electrolyte is deposited on the cathode.

CARBON AND ITS COMPOUNDs

Atomic Number:6 Atomic Mass: 12

Electronic configuration: $1S^2\ 2S^2\ 2P^2$

2 , 4

1.1 Why carbon does not form ionic bond?

1.2 Why carbon does not form C4- anion?

1.3 Why carbon forms covalent bond with other carbon atoms but not ionic bond explain?

Ans :* To form C4- anion carbon has to gain four extra electrons

* Then number of electrons in carbon becomes 10
* It would be difficult for the nucleus with six protons to hold on to ten electrons
* That is four extra electrons
* So carbon does not form C4- anion

2.1 Why carbon does not form C4+ cation?

2.2 Why carbon does not form ionic bond?

Ans :* To form C4+ cation carbon has to lose four electrons

* Large amount of energy is required to remove four electrons
* So carbon does not form C4+ cation

3. What is Covalent Bond?

Ans : By taking methane as an example explain the formation of covalent bond.

Bond formed by sharing of electrons between two atoms is called covalent bond

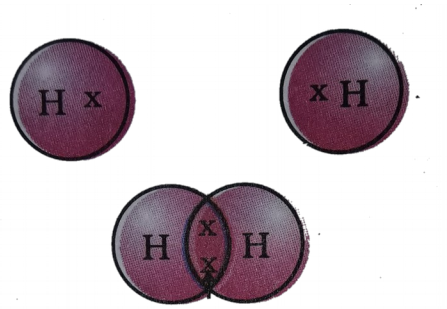
4. List the Properties of covalent compounds:

Ans : * Covalent compounds are poor conductors of electricity

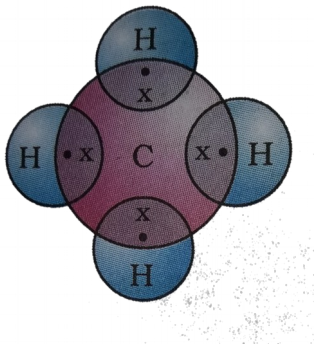
* Boiling and melting point of covalent compounds is low
* Covalently bonded molecules have strong bond within the molecule
* Inter molecular forces are weak

5. Write electron dot structure for the following

Hydrogen



Methane



6.1 List the versatile nature of carbon.

6.2 What is catenation?

6.2 Carbon forms large number of compounds which property of carbon is responsible for this?

Ans :* Number of carbon compounds is more than the total number of compound formed by all other elements

Reasons for large number of carbon compounds

Carbon forms bonds with other carbon atoms forming large molecules this property is called **catenation.**

Catenation occurs in three ways:

i] Straight chain ii] Bonded chain iii] Ring structure

Valency of carbon is four: With the valency of 4 carbon is capable of bonding with four other carbon atoms and also with four other monovalent elements .

7. What are hydrocarbons?

Ans : Compound containing only carbon and hydrogen are called hydrocarbons.

8. Write differences between saturated and unsaturated hydrocarbons?

Ans :

Saturated Hydrocarbons	**Unsturated Hydrocarbons**
Contain only single bond between carbon atoms	Contain double/triple bond between carbon atoms
Ex: Methane[Alkanes]	Ex:Ethene, Ethyne [Alkenes, Alkynes]

9. Write differences between alkanes, alkenes and alkynes.

Alkanes	Alkenes	Alkynes
Contain only single bond between carbon atoms	Contain double bond between carbon atoms	Contain triple bond between carbon atoms
General formula of alkanes is C_nH_{2n+2}	General formula of alkenes is C_nH_{2n}	General formula of alkenes is C_nH_{2n-2}
Ex: Methane, Ethane	Ex: Ethene, Propene	Ex: Ethyne, Propyne

10. What are homologous Series?

Ans : Series of organic compounds in which succeeding members differs by $-CH_2$ is called homologous series.

Ex: CH_4 CH_3OH

C_2H_6 C_2H_5OH

C_3H_8 C_3H_7OH

11. List the properties of homologous compounds?

Ans : * Successive members differ by -CH2

* Successive members differ by 14u of atomic mass
* Homologous compounds have similar chemical properties
* Homologous compounds have different physical properties

12. What are functional groups?

Ans : Groups which determines the property of a compound is called functional group

13. What is the functional group of ketone?

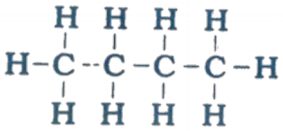
Ans :-CHO indicates which functional group?

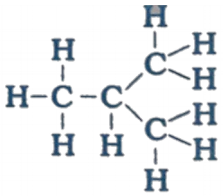
-OH	Alcohol
-CHO	Aldehyde
-CO	Ketone
-COOH	Carbocylic acid
-COO	Ester
-Cl, -Br	Halogens

14. What are isomers? Write the structural isomers of butane

Ans : Compounds having same molecular formula but different structure are called isomers.

Ex: Butane C_4H_{10}





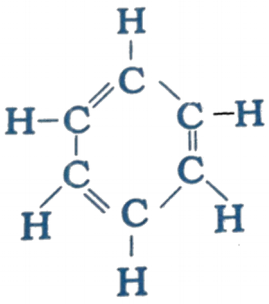
15. Write the structuer of following hydrocarbons

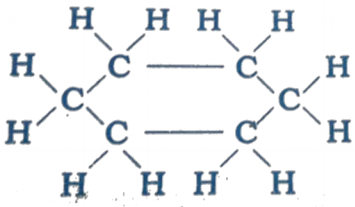
a) Propane b) Propene c) Propyne d) Cyclo Propane

Reffer Textbook page No.07

16. Write the structure of Cyclohexane and Benzene

Benzen C_6H_6 Cyclohexane C_6H_{12}





17. Which functional group is present in this hydrocarbon? a) Propanol b)Propanone c) Propanal

Reffer Textbook page No.11

18. Explain the combustion reaction of hydrocarbons.

Ans : Carbon compounds burn in oxygen to give carbon dioxide, heat & light

$C + O_2$ ------> CO_2 + Heat & light

$CH_4 + O_2$ -------> $CO_2 + H_2O$ + Heat & light

$CH_3CH_2OH + O_2$ -------> $CO_2 + H_2O$ + Heat & light

19. By using flame test how you can distinguish beween saturated and unsaturated hydrocarbons.

Ans : Saturated hydrocarbons -------> Clean flame (blue)

Unsaturated hydrocarbons ------> Yellow flame with balck smoke

20. Write chemical reaction in which alocohol change into carboxylic acid.

Ans : On oxidation alcohol are converted to carboxylic acids

$$CH_3CH_2OH \xrightarrow[\text{Acidic } K_2Cr_2O_7]{\text{Alakaline KMnO4}} CH_3COOH$$

Oxidising Agents:-

Chemicals which add oxygen to other substances are called oxidising agents.

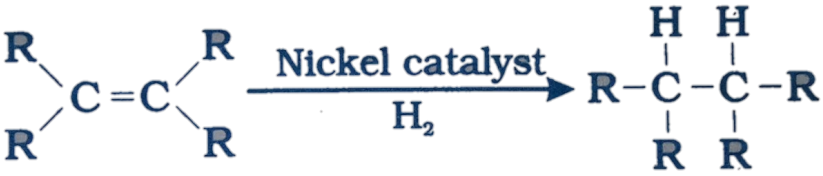
Ex: Alkaline $KMnO_4$, Acidic $K_2Cr_2O_7$

21.1 Explain the addition reaction of hydrocarbons with an example.

21.2 What is hydrogenation reaction?

Ans : Unsaturated hydrocarbons add hydrogen in the presence of nickel or palladium catalyst to give saturated hydrocarbons

Process of conversion of unsaturated oils into saturated fats in the presence of nickel catalyst is called hydrogenation.



Catalyst :

A substance which changes the rate of reaction without affecting itself is called catalyst.

22. What is substitution reaction? Give one example

Ans : A reaction in which one type of atoms or a group of atoms take the place of another is called substitution reaction

$CH_4 + Cl_2$ ----------> CH_3Cl + HCl

23. Write differences between soaps and detergents

Soaps	Detergents
Does not clean in hard water	Cleans in hard water also
Prepared from oil or fat	Prepared from petolium products
Biodegradable	Non biodegradable
Does not causes soil or water pollution	Causes soil or water pollution

24. What is soap?

Ans : Sodium or potassium salt of long chain carboxylic acids are called soap.

25. What is a detergent?

Ans : Sodium salts of sulphonic acid or ammonium salts with chloride or bromide ions is called detergent.

26. Explain cleaning action of soaps

Ans : * Soap molecules has two ends

* Ionic end of soap interacts with water and the hydrocarbon end interacts with oil
* Soap molecule forms structures called miscells.
* An emulsion forms in water
* Miscells help in pulling out the dirt and cleans clothes

27. Which ions are responsible for hardness of water?

Ans : Hardness of water is due to the presence of Ca^{2+} and Mg^{2+} ions

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PERIODIC CLASSIFICATION OF ELEMENTS

1.1 Helium, Neon and Argon are called zero group elements. Justify the statement.
1.2 Helium, Neon and Argon are kept in the 18^{th} group in the periodic table.why?

Ans: The valency of elements like Helium, Neon and Argon is usually zero.

2.Element 'M' forms a chloride with the formula'MCl_2' which is a solid with high melting point. To which group of the periodic table does the element 'M' belong?

Ans: Since the element M forms the compound MCl_2 , its valency is 2. Therefore it belongs to group 2

3.Arrange the following elements in increasing order of their atomic radii.

a) Li, Be, F,N b) Cl, At, Br, I

Ans: a) F<N<Be<Li b) Cl<Br<I<At

4.1 18^{th} group elements are called Noble gases. why?
4.2 Helium, Neon and Argon are called Noble gases. why?

Ans: Since shells of these elements are completely filled with maximum number of electrons, these are known as noble gases.

5. Why should hydrogen be placed in group I?

Ans: Since hydrogen has only one electron in its outermost shell.

6.In the construction of periodic table, the periodic law is broken in some places. Why?

Ans: It is due to the presence of isotopes of some elements.

7. 18^{th} group elements are called Inert gases. Why?

Ans: Valency of these elements is usually zero. They do not form bond with any other elements. They are chemically inert. Hence 18^{th} group elements are called Inert gases.

8.If an element X is placed in group 14, what will be the formula and the nature of bonding of its chloride.

Ans: XCl_4, Covalent bonding.

9. How will be tendency to gain electrons change as we go from left to right across a period. Why?

Ans: On moving from left to right across a period ,metallic nature decreases and non-metallic nature increases.

10. Lithium , sodium and potassium form a Dobereiner's triad. The atomic mass of Lithium and potassium are 7 and 39 respectively. Predict the atomic mass of sodium.

Ans: $= \frac{Atomic\ mass\ of\ Lithium + Atomic\ mass\ of\ Potassium}{2}$

$= \frac{7+39}{2}$ **= 23**

11. A metal 'X' forms an oxide having the formula 'XO'. It belongs to third period in the modern periodic table. Write the atomic number , Valency , electronic configuration and name of the group to which the element belongs.

Ans: Atomic number- 12
Valency- 2
Electronic configuration-2, 8,2
The element belongs to II group.

12. Two elements M and N belong to groups I and II respectively and are in the same period of the periodic table. How do the following properties of M and N vary?
i) Sizes of their atoms.
ii)Their metallic nature
iii)Their valencies in forming oxides iv)Molecular formulae of their chlorides

Ans: i)The atomic radius of M is greater than 'N'
ii)'M' is more metallic than 'N'
iii)'M' has a valency of 1 and 'N' has a valency of 2
iv)MCl, NCl_2

13. The elements of the second period of the periodic table are given below

Li Be B C N O F

a)Why atomic size decreases from Li to F
b) Identify the most i) metallic ii) non-metallic element

Ans: a) As we move along a period (from Li to F), thare is an increase in the nuclear charge which tends to pull the electrons closer to the nucleus and thus reduces the size of the atom.
b) i) Li(Lithium) ii) F (Fluorine)

14. Atomic numbers of three elements A,B and C are 9,12 and 17 respectively. Amongst A ,B and C
i) Which elements belong to the same group?
ii) Which elements belong to the same period?

Ans: Electronic configuration of A (atomic no. 9)= 2(K), 7(L)
Electronic configuration of B (atomic no. 12)= 2(K), 8(L), 2(M)
Electronic configuration of C (atomic no. 17)= 2(K), 8(L), 7(M)
i)Elements' A 'and 'C' belong to the same group, because they have the same number of valence electrons.
ii)Elements 'B 'and 'C' belong to the same period ,because they have the same number of electron shells.

15. Nitrogen(atomic number=7) and Phosphorus (atomic number=15) belong to the group 15 of the periodic table. i)Write the electronic configuration of these elements.ii) Which of these will be less electronegative and why?

Ans : i)Electronic configuration of Nitrogen : K -2, L-5
Electronic configuration of Phosphorus : K -2, L-8, M-5
ii) Phosphorus will be less electronegative because its electrons are further away from the nucleus and thus electrons can be easily lost .

16.a)An element has electronic configuration 2,8,6. Explain its position in the periodic table.
b) Size of atom is bigger than that of hydrogen atom. Why?

Ans: a)Third period and group 16.
b)Size of the atom increases down the group as new shells are added.

17. The atomic numbers of elements P,Q,R, S are 3,17,13 and 11 respectively.
a)How many valence electrons are there in the element 'R'?
b) What is the valency of 'P'?
c)Name the group of 'S'.
d)Between 'P' and 'S' which is larger in atomic size?

Ans: a) Number of valence electrons is 3
b)Valency of 'P' is 1
c) Electronic configuration K-2, L-8, M-1 Hence group 1
d) S

18. How does the tendency to gain electrons change as we go down the 16th group of periodic table? Why?

Ans: As we go down the 16th group of periodic table, tendency to gain electrons decreases, because the electronegative character of elements gradually decreases down the group.

19.Lithium, Sodium & Potassium are kept in the same group on the basis of their similar properties.
a)What is the similarity in their properties?
b) If the atomic mass of Lithium is 7 and potassium is 39. Calculate the atomic mass of sodium.

Ans: a) Lithium , Sodium and Potassium catch fire in air to form their respective basic oxides. They react with water at room temperature to form their respective alkali solution and displace hydrogen.

b) $= \frac{Atomic\ mass\ of\ Lithium + Atomic\ mass\ of\ Potassium}{2}$

$= \frac{7+39}{2}$ **= 23**

20.i) Atomic size increases as we go down the group in the periodic table.Why?
ii) How does atomic size change as we go down the group in the periodic table?

Ans: As we go down the group in the periodic table, new shells are being added to the atom. Hence atomic size increases down the group .

21. i) Atomic size decreases as we move from left to right in a period in the periodic table.Why?
ii)How does atomic size change as we move from left to right in a period in the periodic table?

Ans: As we move from left to right in a period in the periodic table, An increase in nuclear charge which tends to pull the electrons closer to the nucleus and reduces the size of the atom. Hence atomic size decreases along a period.

22.a)Why are noble gases called as inert gases?
b)Name any two noble gases .
c)Why are the noble gases placed in a separate group?

Ans: a)Because thay are chemically inert and they do not react easily with other elements.
b)Helium (He) , Neon (Ne), Argon (Ar).
c) Because noble gases have complete doublet or octet configuration (Octet structure).

23. The position of three elements A,B and C in the periodic table are shown below.

GROUP 16	GROUP 17
----------	----------
----------	A
----------	----------
----------	----------
B	C

a) State whether A is metal or non metal
b) State whether C is more reactive or less reactive than A
c) Will C has larger or smaller in atomic size than A?

Ans: a) A is a metal
b) C is more reactive than A
c) C is larger in atomic size than A

24. Given below are four elements with their atomic numbers

Elements	Atomic number
A	16
B	11
C	03
D	14

a) Identify the elements which belongs to the same group of the modern periodic table.
b) Arrange the given elements in decreasing order of atomic size.
C) Write the formula of the oxide of B.
d) Which of the above elements is a metalloid?

Ans: a) B and C
b) B > D > A > C
c) B_2O
d) D is a metalloid

25. The position of four elements A,B, C and D in the periodic table are shown below.

Group 1	Group 17
---	---
---	B
D	---
---	---
A	C

a) Name most electronegative element.
b)Name the most reactive metal.
c)State whether B is a metal or a non-metal.
d) Which one of the given elements is expected to have largest atomic radius?
e)Which will be the nature of bond formed between D and B?

Ans: a) B
b) D
c) Non-metal
d) A
e) Ionic bond

26. Three elements A,B and C have atomic number 7,8 and 9 respectively.
a)What would be their positions in the modern periodic table(mention group and period both)
b) Arrange A,B and C in the decreasing order of their atomic size.
c)Which one of the three elements is most reactive?Why?

Ans: a) A--→ 2^{nd} period, 15^{th} group
B-→ 2^{nd} period , 16^{th} group
C--→2^{nd} period , 17^{th} group
b) C, B, A
c) A is most reactive because along the period ,reactivity decreases as effective nuclear charge acting on the valence shell electrons.

27. Which element has
a)Two shells both are completely filled with electrons.
b)The electronic configuration of 2, 8, 2
c)A total of 3 shells with 4 electron in its valence shell.

Ans: a) Neon K-2, L-8 =10
b) Magnesium
c) K-2, L-8, M-4 =14 (Silicon)

28.Table below shows three elements P,Q and R along with their electronic configuration.

elements	P	Q	R
electronic configuration	2, 6	2, 8, 6	2, 8

a)Which elements belong to the same period?
b)Which element belongs to the group 18?
c)Which elements belong to the same group?
d)Which element amongst P and Q is less reactive ?
Ans: a) Elements P and R belong to the same period.
B)Element R belongs to the group 18.
c) Element P and Q belong to the same group.
d) Element Q is less reactive than P.

29. Atomic numbers of elements A,B,C,D and E are 8,10,12,3 and 19 respectively. Answer the following questions related to periodic table.
a)Which elements belong to S block?
b)Which element is inert gas?
c)Which element has larger atomic size?
Ans: a) C, D and E elements belong to S block.
b) Element B is an inert gas.
c) Element E has larger atomic size.

30. Observe the periodic table and answer the following questions .

1	2	13	14	15	16	17	18
Lithium			Carbon		Oxygen		Neon
A			D				P
B							Q
C							R

a)Atomic number of carbon is 6, then what is the atomic number?
b)Which element has larger atomic size among the elements A,D and P? Give reason.
c) Which element has smaller atomic size among the elements A,B and C? Give reason.
Ans: a) Atomic number of Neon is 10
b) Element 'A' has larger atomic size. Because atomic size decreases along a period.
c) Element 'A' has smaller atomic size. Because atomic size increases down the group.

31.Electronic configuration of three elements is given in the table .

Elements	Electronic configuration
X	$1s^{2,}\ 2s^2\ 2p^{6,}\ 3s^2$
Y	$1s^2, 2s^2\ 2p^6, 3s^2\ 3p^6, 4s^2$
Z	$1s^2,\ 2s^2\ 2p^6$

a) Which element has larger atomic size among these elements?why?
b) Which element has smaller atomic size among these elements?why?
Ans :
a) Element ' Y' has larger atomic size. Because element ' Y' has highest number of shells.
b) Element ' Z' has smaller atomic size. Because element ' Z' has less number of shells.

32. Electronic configuration of an element is 2,8,7
a)What is the atomic number of this element?
b)Which elements are having similar chemical properties?(Atomic numbers are given)
N(7), F(9),Cl(17), Ar(18)
Ans : a)atomic number of element (Chlorine)=17
b) Chlorine (2,8,7) and Fluorine(2,7) are having similar chemical properties (Halogens). Because these two elements have similar electronic configuration.

BIOLOGY

LIFE PROCESS

1.1Which tissue responsible For transportation in human?
1.2 What is blood ? Writes its function
1.3 what is the importance of blood in human transport system

Ans: The tissue responsible for transportation in human are called blood tissue
Blood components and their function :
a) plasm : - Plasma is a liquid blood matrix , It help to transport digestive food, CO_2, and nitrogenous waste in dissolved form in our body.
b) Red blood cells: It has hemoglobin it help to transport Oxygen from lungs to cells.
c) White blood cells: White blood cells kills germs and produce immunity to our body
d) Platelets : Help to clotting the blood when blood vessels cut or wounded and also help to stop internal bleeding.

2. Name the component of human circulatory system. Mention its function

Ans: Heart, Blood vessels , and Blood
Functions : Heart - Receive oxygenated blood from lungs and carbon dioxide blood from body and pumps the blood throughout the body.
Blood vessels : carry the blood from heart to through out body and lungs and Lungs and body to heart
Blood : Transport the food,water,nitrogenous wast and oxygen and carbon di oxide etc through out the body.

3.1 Human or mammals heart have 4 chamber why?
3.2 what is the importance of 4 chamber heart in human beings or mammals

Ans: 4chamber of heart help to separates Oxygenated blood and carbon dioxide blood, and pump separately.

4.1 Explain heart structure and its blood pumping mechanism.
4.2 Explain heart structure and its function

Ans: Structure Of heart ; The heart covered by a layer called as Pericardium layer. Its has 4 chamber, two are atrium and two are ventricles .
Left atrium and ventricle ,and right atrium and ventricle are separated by a septum. It help to prevent mixing of oxygenated blood and carbon dioxide blood The left and right atrium have thick wall.
* The wall of ventricles thicker than atrium .
* The aorta from left ventricle and pulmonary artery from right ventricle carries out Oxygenated blood and carbon-dioxide blood respectively.
* Pulmonary veins which bring oxygenated blood from lungs to left atrium and the superior and inferior venacava brings which brings deoxygenated blood from body to right atrium.
Heart function
* left atrium receive oxygenated blood through pulmonary veins and at same right atrium received deoxygenated blood through venacava.
* Then atrium contract and ventricle relax so oxygenated blood enter in to left ventricle and de oxygenated blood enter in to right ventricle through valves.
*Then ventricles contract the blood from left ventricle pumped into aorta and from right de oxygenated blood pumped in to pulmonary artery. Carried in to lungs Systematic contraction and relaxation of atriums and ventricle heart pump the blood throughout body organs.

5.1 explain the function of following part of the heart

a) heart valves b) septum

Ans: Heart valves avoid re entry of blood from ventricles to atrium when contraction of ventricles

Septum : It separates oxygenated blood and deoxygenated blood Or Avoid mixing of oxygenated blood and deoxygenated blood in heart .

6.1 Write the difference between atrium and ventricles

6.2 How ventricle differ from atrium

Ans:

Atrium	Ventricles
Atriums receives oxygenated blood from lungs and deoxygenated blood from body.	Ventricles pumps oxygenated blood through aorta and deoxygenated blood through pulmonary artery.
Its walls are thin .	Its walls are thick.

7.1 What is double circulation ?

7.2 Blood goes twice to the heart why?

7.3 In human heart including the lungs,heart and for different parts of body how does blood transport ?

Ans: Blood passes through the heart twice per circuit is called double circulatory system. .

Double circulation in human beings allows the separation of oxygenated and deoxygenated blood in body. It helps pure blood to reach the different tissues and organs of the body.

In human heart including the lungs,heart and for different parts of body. blood does transport as follows_

Oxygenated blood from lungs ---> to left atrium ---> to left ventricle ---> aorta ----> all parts of body.

De oxygenated blood ----> to right atrium ----> to left atrium ----> pulmonary artery ----> to lungs

8.1 In birds and mammals heart highly evolved than other vertebrates why?

8.2 Why does birds and mammals have 4 chambered heart?

8.3 How does birds and mammals heart differ from other vertebrates ?

Ans: Birds and mammals are warm blooded animals,they expend lot of energy and need a lot of oxygen.4 chambered heart make this possible.

9.1 How is transport system in fishes?

9.2 Fishes have two chambered heart how does oxygen supply take place.

9.3 In which vertebrates the blood goes once to the heart in each circulation.

Ans: Fishes have only 2 chamber heart and only single circulation of blood taking place Because Fish absorb dissolved oxygen from water through gills.

10. Name different type of blood vessels in man ?

Ans: Arteries, veins and blood capillaries are 3 type of blood vessels in human beings.

11.1 How arteries differ from veins
11.2 Write difference between arteries and veins

Ans:

Arteries	Veins
Carrying blood away from heart to all part of body.	Bring blood from lungs and body to heart
Arteries walls are thicker than veins	Veins walls are thinner than arteries
No valves in arteries	Valves are present in veins

12.What is blood capillaries ? Write importance of blood capillaries in blood circulation or transport system?

Ans: very small branches of arteries is called as blood capillaries. Function or importance of capillaries is that where in materials are exchanged between the blood and cells.

13.1 What is lymph ? Mention lymph impotence in transport system?
13.2 Name the color less fluid present in intracellular space. List its function
13.3 Which tissue transport fat from intestine and transport dissolved subsentence in side and out side of cells.

Ans: Colorless tissue fluid is called as Lymph
function of lymph : It carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood.

14.1 Name transporting materials in plants ?
14.2 Which tissues responsible for transport in plant .
14.3 Explain briefly transportation in plant .

Ans: Plants transport lots of materials through plant body.
Water,minerals,photosynthesis product,nitrogenous waste,CO_2 and oxygens are major transporting materials in plants.
Vascular tissues like xylem and phloem are responsible for transportation in plant. Xylems moves water and minerals obtained from the soil. the phloem transport product of photosynthesis from the leaves where they are synthesized to other part of the plant.

15.1 Explain briefly water and minerals transportation in plant.
15.2 How water and dissolved minerals transport through xylem.

Ans: The xylem is water and mineral conducting tissue. It transport water and dissolved minerals from roots to all parts of plant through tracheids and vessels. Roots cells absorb water and minerals, Transpiration creates a suction pressure,as a result of which water is forced into the xylem cells of roots. Then there is a steady movement of water from the root xylem to all parts of the plant parts through the interconnected water conducting channels.

16.1 Which technique or process used by plant to transport water from root to tip of the stem or leaves.
16.2 How plant modified for transpiration ? List the uses of transpiration.

Ans: Technique or process used by plant to transport water from root to tip of the stem or leaves is Transpiration.
The epidermal cells of leaf cells modified as guard cells and form micro opening called stomata which help for transpiration.

The loss of water in the form of vapor from aerial parts of plant is know as transpiration.

Uses of Transpiration : a) It helps in absorption and upward movement of water and dissolved minerals from roots to the leaves.

b) It also regulates temperature in plant.

17.1 What is translocation?

17.2 How translocation taking place in plant ?

17.3 Explain briefly transportation of food in plant .

Ans: Transportation of photosynthesis product,amino acid etc through phloem is called as Translocation.

These process required energy in the form of ATP. As a result of this the osmotic pressure in the tissue increases ,causing water to move into it. this pressure moves the materials in the phloem to the tissue which have less pressure.

17.During spring season sucrose stored in stem and root transport to buds why?

Ans: The growth of buds need more energy so during spring season sucrose stored in stem and root transport to buds.

18.Define excretion ? How to excrete nitrogenous waste in unicellular and multicellular organism,

Ans: Excretion is process in which metabolic waste (CO2, nitrogenous waste) eliminated from an organism .

The unicellular organisms excrete waste through osmosis into surrounding water.

Multicellular excrete waste through different organs like kidnies, lungs, skin etc.

19. Name human excretory systems Organs .

Ans: Human excretory systems include 1pair kidnies, 1pair ureters & urinary bladder.

20.1 Which is structural and functional unit of kidnies ? Explain its structure briefly.

20.2 What is nephron? Explain its structure.

Ans: Structural and functional units of kidnies are called Nephrons. It is a microscopic tube like structure,

It has three Maine parts such as tuft of capillaries called glomerulas, Bowman's capsule and renal tube. The nephron covered by blood capillaries.

21.1 Explain formation of urine in nephron.

21.2 Explain step of urine formation in nephron.

Ans: Each kidnies has more than lac of nephron. Each nephron filtre urine from blood.

There are three Maine steps of urine formation – glomerular filtration,reabsorption and secretion

When blood pass through glamerulas, except blood all materials like nitrogenous waste, glucose, amino acid ,minerals,vitamins,water etc filter into Bowman's capsule. At the filtrate passes to the renal tubules useful substances including some water,glucose, amino acids, vitamins hormones etc selectively reabsorbed into blood. The filtrate pass through nephron tube excess of water secrete into tube of nephron and finally. urine formed and pass to collective tube.

22.What are the excretory substance in plant. How to plant excreat their waste?

Ans: Oxygen,(product of photosynthesis) carbon dioxide,(product of respiration), water,nitrogenous waste are Maine excretory substance of plants.

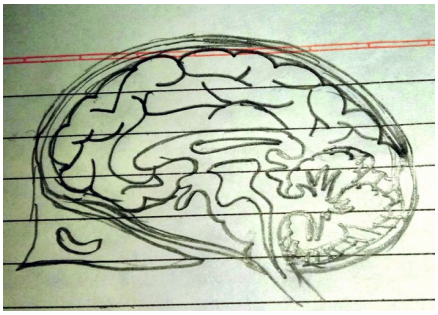
The oxygen, carbon dioxide and water vapor are removed through stomata. Some waste products collect in the leaves and bark of trees. When the leaves and bark shed the waste removed.

CONTROL AND COORDINATION

1.1 Name the part of the brain which controls, posture and balance of the body.
1.2 What are the functions of cerebellum ?
1.3.Why a drunkard can not walk properly ?
1.4 A person should not drive after consuming alcohol. Why ?
1.5 We feel unstable after we complete our round in Merry go round. Why ?
1.6 Which part of the brain helps in cycling and to lift a pencil lying on the ground & Why ?

Ans: Cerebellum controls the equilibrium, posture and balance of the body.

2.1 How is brain protected ?
2.2 Why brain is in the bony cavity , cranium ?
2.3 Bike riders should wear helmets why ?



Ans: Brain, as it is made up of soft tissue is protected by bony box called cranium ,within which three layers of fluid filled membranes are present for absorbing shock .

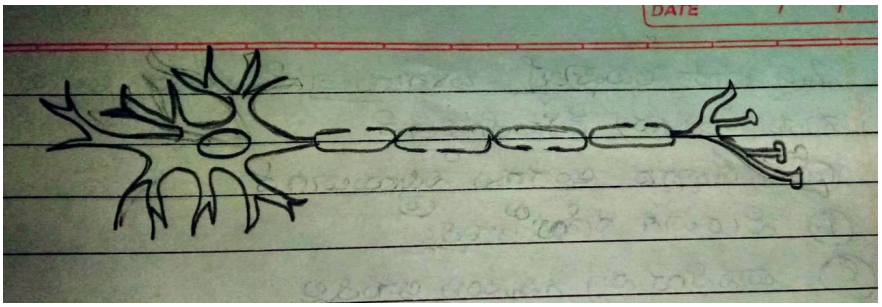
3.1 What are the functions of Hypothalamus?
3.2 Name the part marked in the diagram . What are its functions.
3.3 Which part of the brain gives you the massage your stomach is filled?
3.4 Name the part of the brain which controls pituitory the master gland.

Ans: Hypothalamus controls hunger, thirst, body temperature and also controls the master gland pituitary.

4.1 State the structural and functional unit of nervous system .
4.2 Draw its neat labelled diagram and write two functions .
4.3 a. Draw the structure of neuron and label cell body and axon.
b. Name the part of the neuron
i. Where information is acquired
ii.Through which information travels as an electric impulse.
4.4 State any three functions of the structural and functional unit of the nervous system.

Ans :

Neuron

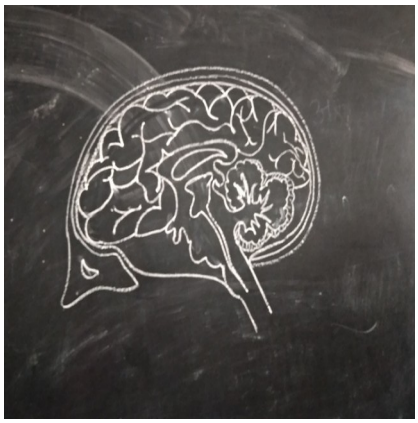


5.1 What is synapse in a neuron cell , how's an electrical impulse is created ? What is the role of synapse in this context.
5.2 What is the name given to the junction between neurons ? Describe how an impulse crosses the junctions.
5.3 What happens at synapse in between two neurons.

Ans : Two neurons do not make direct contact. Where they meet, there is a very small gap called a synapse. Signals cross this gap using chemicals released by a neuron. The chemical diffuses across the gap makes the next neuron transmit an electrical signal.

i. An electrical impulse travels along an axon.

ii.This triggers the nerve – ending of a neuron to release chemical messengers called neurotransmitters.



6.1 After a man mets with an accident he losses some of his capacities.

a. His left side organs are not functioning .

b. He can't walk straight.

c. He can't recognize smell.

d. After eating also he can't feel his stomach is filled.

Which parts of his brain are damaged mention them .

6.2 Label the parts of brain in the given diagram and write their functions.

6.3 Draw the diagram of brain and label the parts that perform following actions

i. Part which controls involuntary functions
ii. Part which controls hunger.
iii. Part which maintains equilibrium.
iv. Part which helps us to remember something.

Ans : Right hemisphere of cerebrum is effected As the nerves from the left side of the body has the connection with right hemisphere

His cerebellum is effected As it controls the equilibrium of the body

His cerebrum is effected As it is having the center for recognizing smell and helps to remember something and known as seat of consciousness.

His hypothalamus is effected As it controls hunger, thirst, body temperature and also the pituitary gland.

7.1 Name the part marked in the diagram . What are its functions.

7.2 Name the part of the brain that controls involuntary activities

7.3.Our mouth will be filled with saliva only on seeing pickles. Name the part of the brain which controls this action.

7.4 What are the functions of Medulla ?

Ans : Medulla , part of hind brain controls some of the autonomous functions like vomiting, coughing sneezing etc..

8.1 Which is the seat of consciousness ?

8.2 Which part of the forebrain is known as seat of consciousness ?And why ?

8.3 Why cerebrum is called as seat of consciousness ?

8.4 Enlarged growth of this part of the brain has made man unique being, mark this part and mention its functions.

Ans : Fore brain , cerebrum is the seat of consciousness . This is the biggest part of brain and will be having receiving stations of all sensory organs. It receives the the messages and stores themand recalls whenever necessory.

9.1 Write an example for immediate response to stimulus.

9.2 Write an example for independent movement that does not involve growth.

9.3 Which is the movement of plants that uses electrical –chemical means to convey the information.

Ans: Movement of leaves of Touch Me Not plant.

10. Give an example for the movement due to growth.

Ans: Growth of tendrils of Pea-plants.

11. Name the type of movement which involves the downward growth of roots.

Ans: Geotropism.

12. Name the type of movement which involves the growth of roots towards water.

Ans: Hydrotropism

13. Name the type of movement which involves the growth of pollen tubes towards ovules.

Ans: Chemotropism.

14. Give an example for Chemotropism.

Ans: Growth of pollen tubes towards ovules.

15. Give an example for Phototropism.

Ans: Movement of Sunflowers.

16. Name the type of movement that involves the response of the plant to the direction of light.

Ans: Phototropism.

17.1 Name the hormone that is synthesized at the shoot tip when the growing plants detect light.

17.2 Which is the hormone that helps the cells to grow longer?

Ans: Auxin.

18.1 Why the plants appears to bend towards light ?

18.2How does auxins help in the growth of plants?

Ans: When light is coming from one side of the plant , auxin diffuses towards the shady side of the shoot. This concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light. Thus the plants appears to bend towards light.

19.1 Which is the hormone that promotes cell division?

19.2 Name the hormone that is present in greater concentration in areas of rapid cell division such as in fruits and seeds.

Ans: Cytokinin.

20. Name the hormone that help in the growth of stem.

Ans: Gibberalin.

21.1 Give an example for the hormone that inhibits the growth of plants.

21.2 Which is the hormone responsible for wilting of leaves?

Ans: Abscisic Acid.

22.1 How does the Adrnaline hormone manages the Emergency situation?
22.2 Adrenaline hormone is called as the “Emergency Hormone” Why?

Ans: i) Adrenaline is secreted in larger concentration in to the blood and carried to different parts of the body.

ii) Adrenaline increases the heart beat, respiratory rate resulting in the supply of more oxygen to our muscles.

iii) The blood to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs. This diverts the blood to our skeletal muscles.

iv) The breathing rate also increases because of the contraction of the diaphragm and the rib muscles. All these responses together enable the animal body to deal the emergency situation.

23.1 We should use iodised salt in our diet Why?
23.2 Iodine is essential for the synthesis of Thyroxine why?
23.3 What is the role of Iodine in our body?

Ans : Thyroxin hormone regulates carbohydrate, protein and fat Metabolism in the body so as to provide the best balance for growth. Such Iodine is essential for the synthesis of thyroxin.

24.1 Swollen neck is the symptom of which disease?
24.2 Name the deficiency disease of Iodine.

Ans: Simple Goitre.

25. Name the hormone secreted by the pituitary gland.

Ans: Growth Hormone.

26.1 Write the function of Growth hormone of Pituitary.
26.2 How does Dwarfism and Gigantism occurs?

Ans: Growth hormone regulates growth and development of the body. Deficiency of the growth hormone of Pituitary in childhood leads to Dwarfism. If the growth hormone of Pituitary is secreted in excess before attaining puberty, leads to Gigantism.

27.1 Write the function of Testosteron and Oestrogen .
27.2 Mention the function of hormones responsible for Puberty.

Ans: Testosteron Hormone: responsible for the changes in boys.
Oestrogen Hormone: responsible for the changes in girls.

28. Name the hormone secreted by Pancreas , that regulates The blood sugar level.

Ans: Insulin.

29.1 If a person is given insulin injection ,name the disease he is Suffering from. Mention its symptoms.
29.2 Write the function of Insulin.

Ans: Diabetes. Symptoms: i) Increase of sugar level in urine and Blood.
ii) Tiredness , repeated urination.
Function : Insulin regulates the blood sugar level.

30.1 How does the blood sugar level influences secretion of Insulin?
30.2 How does insulin controls the sugar level of blood?

Ans: If the blood sugar level rises, they are detected by the cells of the Pancreas, which respond by producing more insulin. As the blood sugar level falls, insulin secretion is reduced.

Our Environment

1.1 Which pollutant is destroying the ozone layer of the stratosphere?

1.2 What is the chemical used in fire extinguishers?

Ans: CFC

2.1 How does ozone protect life on Earth?

2.2 How Does Ozone affect ecosystems?

2.3 How is ozone important to life?

2.4 Write the function of ozone in the atmosphere overlay?

Ans: Protects the Earth's upper layer from the sun's harmful ultraviolet radiation.

3.1 Why making CFC free refrigerator is mandatory?

3.2 In the current situations CFC-free refrigerators are manufactured, give reason.

Ans: This is because the CFC destroys the ozone layer.

4.1 What is Biomagnification?

4.2 What is a biomass density industry?

Ans: Increases concentration of chemicals in the higher Tropic level in the food chain. Ex: Pesticides, DDT

5.1 How does ozone occur in the atmosphere?

5.2 Describe the role of ultraviolet radiation (UV) in the formation of Ozone with the help of a chemical reaction

5.3 Write the chemical equation for the role of UV-rays in building the Ozone layer.

5.4 Write the chemical reaction of Ozone emission from oxygen in the atmosphere.

Ans: High-energy ultraviolet light breaks down Oxygen molecules into atoms and prevents the earth from reaching the surface.

$$O_2 \text{ ---> } O + O$$

$$O_2 + O \text{ ---> } O_3 \text{ (OZONE)}$$

6.1 Write the causes and effects of ozone depletion?

6.2 Write a short note on ozone degradation.

6.3 Write the Causes and effects of thinning the ozone layer.

- Use of CFC Insulating foam sprays
- Ozone layer is destroyed by overuse of refrigerators and freezers

Effects:

a) Mutagenesis [change in inheritance]
b) Skin cancer in humans,
c) Cataract.

7.1 How is the CFC responsible for ozone depletion?

7.2 Why is excessive use of CFC a cause of concern?

7.3 “Worrying about damage to the ozone layer justify this statement.

Ans: CFCs combine with the atmosphere layer to cause ozone depletion. These harmful radiations reach the earth's surface and cause health problems.

8.1 Why are some materials biodegradable and some not biodegradable?

8.2 Give an example of the difference between biodegradable pollutants and non-biodegradable pollutants.

8.3 How are biocompatible materials better than non-biodegradable materials? Write an example.

Biodegradable substances	Non-Biodegradable substances
Objects which are decomposed by micro-organisms.	Objects which are non-decomposed by micro-organisms.
Ex: Drain, Water, Household waste, Paper.	Ex: Plastic, DDT, Glass.

9.1 What are the problems caused by non-biodegradable wastes we produce?
9.2 Write the effects that non-biodegradable materials can have on the environment?
Ans : * These items should be buried inside the earth.
* It causes Biomagnification.

10.1 How can you help to reduce the problem of waste disposal?
10.2 Give suggestions on trash management needed?
Ans : We can assist in the disposal of waste by the following methods.
- Biodegradable wastes can be used as compulsory gas and fertilizer.
- Recycling of non-biodegradable wastes
- Minimizing the use of non-degradable materials.

11.1 What measures are being taken to limit damage to the ozone layer?
11.2 What are your suggestions to prevent the ozone layer from decaying?
Ans : * Fixing limit usage of CFC.
* CFC production under UNEP in 1987, an agreement was reached to limit t he amount to 1986.
* It is mandatory for all manufacturers to manufacture CFC free refrigerators worldwide.

HOW DO ORGANISMS REPRODUCE ?

1.1 Which reproduction method brings more variations?
1.2 In which type of reproduction two types of parents involved and formed new offspring?
1.3 In which type of reproduction two types of gametes fused together and form a new organism?

Ans: Sexual reproduction

2.1 Which factor selected from environment related to organic evolution?
2.2 Which factor is essential to an organism to survive in a community?
2.3 What is the result of any mistakes taken place in DNA replication?
2.4 In the view of organic evolution if any special factors taking place during sexual reproduction leads to what?

Ans: Variations

3.1 Name the structure formed from the fusion of two gametes?
3.2 Which cell is formed when male gamete fertilized with female gamete?
3.3 Name the structure formed after fertilization ?

Ans: Zygote

4.1 In human beings in which stage we observe different physical changes takes place in girls and boys?
4.2 Growing hairs on the boy's face and cracking of voice, In girls menstruation starting, enlarging of mammary glands all are which symptoms?

Ans: Sexual maturation

5.1 Name the part of the embryo which helps to get nourishment from mother blood?
5.2 Which part of the embryo helps to get Oxygen and food items from mother blood and removes waste to mother blood?

Ans: Placenta.

6.1Seeta's parents received a proposal for her marriage from a boy living in US.Before everything could get finalized she asked her parents to ask the boy to get his blood test report.
a) Do you think it was right on the part of Seeta's parents to do so?
b) What moral values did Seeta show out?
c) Name the STD s from virus?

Ans: a) yes it is necessary to go through the blood reports of both. This indicates the physical fitness and ensures that both are free of any STD's
b) Seeta is very intelligent and sensible.
c) HIV AIDS and warts.

8. Which part protects flower in bud condition or Which is the outer most part in flower?

Ans: Sepals(Calyx)

9. ‘Colourful petals in flower is advantageous to farmers’ Justify this statement or What is the use of petals in a typical flower?

Ans: If petals are colourful and attractive in flowers many Insects attracted by this and it helps to bring pollination.

10. Ramu & Shamu are walking in estate and they observed some flowers and Ramu told that some flowers are unisexual and some are bisexual on which basis he said like that?

Ans: A flower contains either Stamens or Pistil it is Unisexual, if the flower contains both Stamens and pistils it is bisexual.

11. ‘A Botanist says that in flowers there are two types’. Whether it is yes what are the two types?

Ans: Yes, Unisexual and Bisexual flowers.

12. Which part of the Pistil is sticky and what is its use?

Ans: In pistil Stigma is sticky in nature and it helps to attach the pollen grain.

13. If we touch the flowers yellowish powder is observed in our hand. What is that and what is the use of it?

Ans: Yellowish powder is pollen grain. It contain male gamete essential for Sexual reproduction.

14. A former by seeing more butterflies in his land becomes very happy. Why?

Ans: Because Butterflies play an important role in cross pollination process. If more pollination takes place he gets more yield, so he is happy.

15. Government has made rule that marriage age to girls above 21 and for boys 24. Why government made this rule?

Ans: Because marriage is a major responsibility job in humans. The sexual act always has the potential to result in pregnancy, Sexual act makes major demand on both male and female on both body and mind . Human beings reproduce by sexual method after attaining puberty only ex: testis in male and ovaries in female. If a sexual act is done in adolescence age by undeveloped reproductive system, health will be adversely effected. In woman’s due to immaturity in reproductive organs results in abortion and some times it will risk the life of mother also.

16. What is the importance of DNA copying in reproduction?

Ans: DNA contains special coded genetic programme with detailed and specific instruction for each organism . During reproduction there is formation of new cells which must carry same amount and type of hereditary information as present in the parent cell. This is accomplished by DNA copying.

17.1 Gonorrhea, Syphilis, AIDS are examples for what type of diseases?
17.2 Which diseases are caused from very close body contact?

Ans: Sexual diseases.

18.1 Copper –T, Condoms and vagina bags are used in reproduction for what purpose?
18.2 To avoid unwanted pregnancy which methods are used?

Ans: Contraceptive methods

Heredity and Evoluation

1.1 Who is the father of genetics?
1.2 Which scientists made experiments on pea plants ?
1.3 Name the scientist who proposed laws of heredity.

Ans : Gregor Johann Mendel

2.1 What factors could lead to the rise of a new species?
2.2 Mention the various methods by which there is a Increase in the number of population of an organism with specific characters in a biodiversity ?

Ans : Natural selection, genetic drift

3.1 How sex of a baby is determined in humans?
3.2 What is the role of a father in the determination of sex of a baby ?
3.3"Sex of a baby is determined by father not buy mother". justify

Ans : Women's have perfect pair of sex chromosomes both called X. That men have a mismatched pair in which 1 is a normal sized X While the other is a short 1 called Y. So women are XX while men are XY. A child who inherits an X chromosome from her father will be a girl, And one who inherits a Y chromosome from him will be a boy

4.1 Explained how sexual reproduction gives rise to more viable variations than asexual reproduction.
4.2 Explained how sexual reproduction is different from a sexual reproduction
4.3 Explained a sexual and sexual reproduction in terms of heredity and variation
4.4 The new variations in the species helps them for the survival.justify

Ans : In sexual reproduction the chromosomes undergoes changes which leads to variations And it helps the organisms to adapt to the changed environment. But in asexual reproduction the Transfer of chromosomes from 1 generation to another with no changes Makes them not to adapt much to the new environment.

5.1 Explain Mendal's experiment based on law of segregation.
5.2 Explain mono hybrid cross with the help of checkerboard
5.3 Characters of an organism is inherited independently to next generation. Justify the above statement by the help of mono hybrid cross experiment

Ans : "A monohybrid cross is the hybrid of two individuals with homozygous genotypes which result in the opposite phenotype for a certain genetic trait. "The cross between two monohybrid traits (TT and tt) is called a Mono hybrid Cross."

6.1 Which are the 2 ear lobes found in humans? Which is the dominant expressed character?
6.2 In a class of 40 students 75% of students have free ear lobes and 25% students have attached ear lobes. Which is the dominant character in it and why?

Ans : Free and attached ear loops are 2 variants found in human populations. Most people's have free ear lobes and it is Considered as a dominant trait.

7.1 What is meant by speciation? mention the factors responsible for speciation.
7.2 How speciation is caused ?

Ans : the formation of new and distinct species in the course of evolution. Factors responsible for speculation

* Genetic flow and natural selection
* Change in chromosome number
* When variation is combined with geographical isolation .

8. Symptoms acquired by an organism during its lifetime cannot be dictated by biosynthesis. Explain this statement with illustration.

Ans : Changes in the asexual way do not transfer to the DNA of the cell. Therefore, the traits that an organism has acquired over its lifetime cannot be dictated by the biosynthesis.

9.1 What is the law of geographic isolation? Explain with examples
9.2 Moving in conjunction with an African and a European, they are said to be different but belong to the same species. Why? State the appropriate reasons

Ans : Geographical segregation exists whenever the proportions of population rates of two or more populations are not homogenous throughout a defined space. Populations can be considered any plant or animal species, human genders, followers of a certain religion, people of different nationalities, ethnic groups, etc.

10.1 Differentiate between homologous an analogous organ
10.2 How analogous organ differs from homologous organ.
10.3 Are the wing of bat and the wing of the bird are structural or functional organs? Give your answer a valid reason

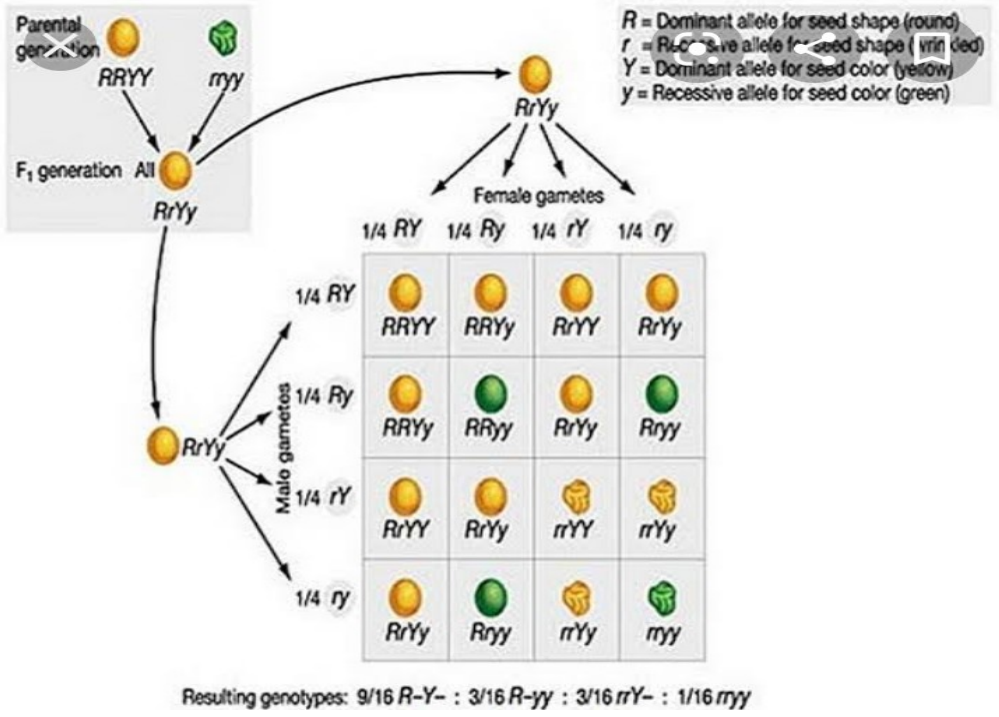
Ans : Genes that are inherited from the same common ancestor and have the same basic structure and are modified to perform different functions are called homologous organs. Examples include lizard toes, bird wings, human forearms. Functional organs are organs that originate from different sources and perform the same function. An example is a butterfly, a bird, a bat's wings.

11.1 Explain 1 example that clarifies genetic drift.
11.2. Why a small number of tigers are still alive is a matter of concern from a genetic perspective.

Ans : Natural disorders in a small group change the repeatability of certain genes, providing diversity without compromises.
For example, fewer tigers survive because of the genetics perspective.
* This small number of tigers will kill any natural disaster. This makes it possible to lose the genes forever
* A small number of low recombination and low differentiation that are very important in giving
the species better survival opportunities.
* A lower number of species means less variety and fewer characteristics, which reduces the likelihood of adaptation to changes in climate

12.1 What qualities are manifested in the F1 generation when crossing the yellow round seed and the yellow succulent seed? What is the ratio expressed in F2 generation
12.2 What is meant by the dihybrid cross ? Explain with the help of checkerboard.
12.3 Explain the proportion of plants available when crossing the Rounded Yellow Seed(RRYY) green seed (rryy) with the help of a checkerboard.
12.4 Green Rounded Seed 9, Green Rounded Seed 3, Yellow Rounded Seed 3, Yellow Rounded Seed 1
* Identify the strong and weak elements
* These factors are independent or intertwined.

Ans : "Dihybrid cross is the cross between two different genes that differ in two observed traits."



13.1 What is the main evidence for the study of genetic relationships between different species?

13.2 Explain with an example how fossils explain the biosynthesis.

13.3 How is the evidence for the evolution of the following organisms? Give an example of each. * Homologous organs * Analogous organs * Fossils

13.4 What are fossils? What do they tell us about the process of life evolution?

Ans : Important evidence for the study of genetic relationships between different species is that of homologous organs, Analogous organs, and fossils.

Homologous Organs that are inherited from the same common ancestor, have the same basic structure, and are modified to perform different functions

Examples : lizard paws, bird wings, human forearms

Analogous organs are organs that originate from different sources and perform the same function

Examples : a butterfly, a bird, a bat's wings.

Fossils: The preserved remains of a dead organism are called fossils. Studies of these have helped us to understand the features of extinct species. We can learn more about the biosynthesis process by comparing these features with living species.

14.1 How Farmers Get Today's Cabbage Cauliflower and Braccolli from Wild Cabbage.

14.2 How to get a cabbage kale vegetable

Ans : Various vegetables are grown from wild cabbage by artificial selection. Humans have been feeding wild cabbage for over two thousand years and have developed a variety of vegetables through its genetic selection. Some farmers developed the current cabbage cultivation by pressing leaves. kale, a leafy vegetable, was developed from a variety of tuber and broad leaf cultivars.

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