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# DistrictAdministration,ZillaPanchyatDharwad

DDPI Office, Department of School Education,Dharwad


## Subject:Science

StudentfriendlyStudyResourceMaterial for
the Succes in S.S.L.C. Examination

## Coordination

DDPI (Admin) and (Development), Education Officers, DistrictPlanningandDeputyCoordinatingOfficer,BEOs,Subject Inspectors and Science Subject Forum.

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**DistrictAdministration Dharwad**

**SchoolEducationandLiteracyDepartmentDharwad**

# Vignan-VidyaVishwas

## SSLCSTUDENTPASSINGPACKAGE

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GovernmentofKarnataka

Smt. Divyaprabhu G.R.J.IAS

DistrictAdministrationDharwad
Honorable Deputy Commissioner and District Magistrate, Dharwad District Dharwad.

DearStudents,

IhopeyoureadthismessagewithattentionandfacetheSSLCexaminationwithconfidence, achieving excellent results.

TheeducationalexpertsofDharwaddistricthavecometogetherandinitiatedaprogram called“Mission Vidyakashi,”whichaims atimproving theexaminationresults and preparing allSSLCstudentstoachievetheirdesiredgoals.Eachofyouhasthepotential,capability,and dreams to achieve success, and the supportive environment will help you realize them. The SSLC examination is a significant milestone for fulfilling your dreams and achieving your future goals. To score well in this examination, consistent study is essential.

Youmight often wonder,“How shouldour daily study routine be structured?” To answer this,MahatmaGandhioncesaid,“Wemustthinkaboutwhatweread,analyzeit,andmake itanintegralpartofourdailylife.”Keepingthisthoughtinmind,understandandmemorize what your teachers teach you daily and reinforce it through regular revision.

Thiseffortwillhelpshapethesuccessofyourfutureendeavors.Theeducationdepartment, with the support of teachers, has prepared additional learning materials that are easy to understandforallstudentsappearingfortheSSLCexamination.Studentsshouldmakegood use of these resources to achieve excellent results.

Withthisinmind,wehopethatthedistrict ofDharwadwillachieve100%successatthe state level as well.

Wishingyouallthebestforyourfutureendeavors!

Smt.DivyaprabhuG.R.J.

DistrictCommissionerandDistrictMagistrate,

Dharwad District, Dharwad

.

GovernmentofKarnataka

DistrictAdministration,ZillaPanchayat,andDepartmentofschoolEducationDharwad"

# "Preface"

A school aims to provide quality education to shape the future effectively. The school, with its variousinitiatives,focusesonnurturingtheuniquequalitiesofeachchildandadaptingteaching methods according to their needs to achieve excellence in education. Students' academic performance is evaluated through exams.

TheSSLCexamisasignificantmilestoneinastudent'slife.Itisessentialforeverystudenttosucceed in this examination. With the goal of helping all students achieve excellent marks and excel in their future educational endeavors, teachers have prepared supplementary materials for all subjects to supportstudents.Thesematerialsareexpectedtobehighlybeneficialinpreparingfortheupcoming exams.

Considering the individual learning pace of each student, teachers have structured these supplementarymaterialsasamodel,guidingthemtoachieveexcellentresults.Itishopedthat studentswillmakethebestuseoftheseresources,facetheexamswithconfidence,andachieve success.

S.SKeladimath DDPI

( Admin)

# "Physics"

"Therearecurrently4chaptersinPhysics,withquestionstotaling28marks. This study guide is designed to help you easily score at least more than 15 marks.

Chapters:

1. Electricity
2. MagneticEffectsofElectricCurrent
3. Light,Reflection,andRefraction
4. TheHumanEyeandtheColorfulWorld

Chapter 1 – Electricity

"Four multiple-choice answers are provided for the following questions or incompletestatements.Choosethecorrectanswerfromthemandwritethe complete answer along with the corresponding option letter."

**1.** Themetalusedinelectricbulbs.

A) Manganese
B) Tungsten
C) Nickel
D) Chromium

**Answer:**B)Tungsten

2. Thedeviceusedtochangetheresistanceinanelectriccircuit:

a) Voltmeter

b) Ammeter

c) Galvanometer

d) Rheostat

Answer:d)Rheostat

3. Thedeviceusedtogenerateelectricity:

a) Galvanometer

b) Generator

c) Ammeter

d) Electric Motor

Answer:b)Generator

4. Thecorrectformulashowingtherelationshipbetweenpotentialdifference, electric current, and resistance in an electric circuit:

a) I=R/V

b) I=VR

c) V=I/R

d) R=V/I

Answer:c)V= I/R

"Answerthefollowingquestionsinonesentence.(1markquestions)"

1. Whatistheinternationalunitofpotentialdifference?
Answer: Volt

2. Namethedeviceusedtomeasureelectriccurrent.

Answer: Ammeter

3. Defineelectricpotentialdifference.

Answer:Theelectricpotentialdifferenceistheamountofworkneededto move a unit charge from one point to another in an electric circuit.

4. Howisanammeterconnectedinanelectriccircuit?
Answer: It is connected in series.

5. Howisavoltmeterconnectedinacircuit?
Answer: It is connected in parallel

6. Whatisaresistor?

Answer:Aconductorwithsignificantresistanceiscalledaresistor.

7. Whatistheinternationalunitofresistivity?

Answer:Ohm-meter

8. Whyarealloysusedinheatingappliances?

Answer:Alloyshavehighresistivityanddonotburnoutathigh temperatures, which is why theyare usedinheating appliances.

9. What are some devices that operate under the principle of heating effect?

Answer:Ironbox,electricoven,electricheater,electrickettle,hairdryer,etc.

10. Whatisthepracticalunitofelectricalenergy?

Answer: Kilowatt-hour

Answerthefollowingquestionsin2-3sentences2marks

1. StateOhm'sLaw.

Answer:Ataconstanttemperature,thepotentialdifference \(V\)acrossa conductorisdirectlyproportionaltothecurrent\(I\)flowingthroughit.The relationship is given by \( V = IR \).

2. Whatfactorsdoestheresistanceofaconductordependon?

Answer: The resistance of a conductor depends on 1) the length of the conductor,2)thecross-sectionalareaoftheconductor,and3)thematerial's inherent properties.

3. StateJoule'sLawofHeating.

Answer:Theheatproducedinaresistoris:

1) Directlyproportionaltothesquareoftheelectriccurrentpassingthroughit.

2) Directlyproportionaltotheresistanceoftheconductor.

3) Directlyproportionaltothetimeforwhichtheelectriccurrentflows through the conductor.

TheformulaisH=$I^2$Rt

4. Whatisafuse?Whatisitsfunction?

Answer:Afuse isawire madeofametaloralloywitha suitable melting point. It protects electrical devices by preventing excessive current from flowingthroughthecircuit,meltingwhenthecurrentexceedsasafelevel.

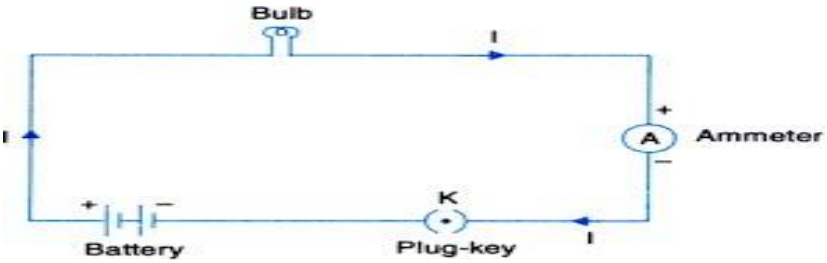
5. Howdoesafusework?

Answer: When an electric current higher than the specified limit flows throughthecircuit,thetemperatureofthefusewireincreases.Asaresult,the fuse wire melts, breaking the circuit. This protects the electrical appliances in the house from damage.

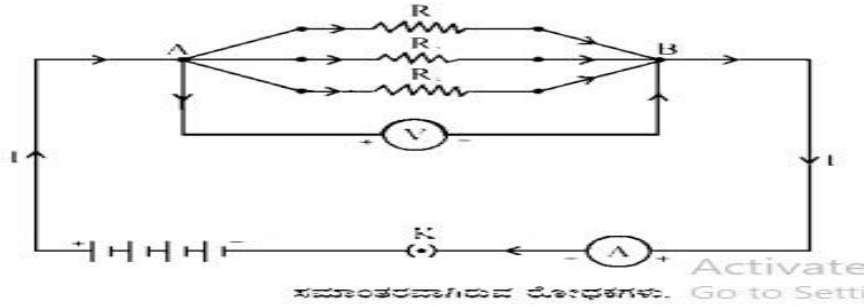
6. Whatiselectricpower?Whatisitsinternationalunit?

Answer:Electricpoweristherateatwhichelectricalenergyisconsumedor used. Its international unit is the watt.

7. "Drawadiagramofasimpleelectriccircuit."




8."Drawadiagramofresistorsconnectedinparallel,andlabeltheammeter, voltmeter, and switch."




9. Drawadiagramofresistorsconnectedinseries,andlabelthecomponents."

10. Arefrigeratorwithapowerratingof400Wisusedfor8hoursaday.Ifthe cost per 1 kWh is ₹3, what is the total energy cost for 30 days?

Answer:

Totalenergyconsumedbytherefrigeratorin30days:

At₹3perkWh,thetotalcostfor30days:

"400W*8hours*30days=96,000Wh=96kWh""But for 1

kWh, it is ₹3 for 30 days."

"Totalenergyusedbytherefrigerator=96kWh*₹3perkWh=₹288.00"

**"Chapter2-TheMagneticEffectsofElectricCurrent"**

"For the following questions or incomplete statements, four alternative answersareprovided.Choosetheappropriateanswerfromthemandwritethe complete answer with the corresponding letter."

1. InFleming'sLeft-HandRule,thedirectionindicatedbythemiddlefingeris:

a) Magnetic Field

b) ElectricCurrent

c) MovementoftheConductor

d) InducedElectricCurrent

Answer: Electric Current

2. Aconductorwirewoundintheformofacoiliscalled:

a) Coil

b) Solenoid

c) Commutator

d) Dynamo

Answer:Coil

3. Themagneticfieldinsidealongstraightsolenoidwithanelectriccurrent:

a) Isuniformatallpoints

b) Iszero

c) Decreasesasyoumovetowardstheends

d) Increasesasyoumovetowardstheends

Answer: Is uniform at all points

4. Themagneticfieldlinesinsideasolenoidareparallelstraightlinesbecause the magnetic field inside a solenoid:

a) Isverystrong

b) Isuniform

c) Iszero

d) Containselectriccurrent

Answer: Is uniform

5. InFleming'sRight-HandRule,ifthethumbindicatesthedirectionofthe electric current, the remaining fingers show the direction of:

a) InducedElectricCurrent

b) MagneticField

c) MovementoftheConductor

d) Mechanical Force

Answer:MagneticField

"Answerthefollowingquestionsinasinglesentence.(1markquestions)"

1. Magneticfieldlinesdonotintersecteachother.Why?

Answer:Atthepointofintersection,thecompassneedlewouldhavetopointin two directions simultaneously, which is impossible, so magnetic field lines do not intersect each other.

2. Whatismeantby"overload"?

   Answer:Overload refers to connecting multiple devices to anelectriccurrent beyond the capacity of the conductor.

3. Mention two measures topreventoverloadin ahouseholdelectrical system.

   Answer:1)Donotconnectmultipleappliancestoasingleoutlet(socket).

   2)Ensurethatliveandneutralwiresdonotcomeintodirectcontact.

4. Whatcausesanoverloadinanelectrical system?

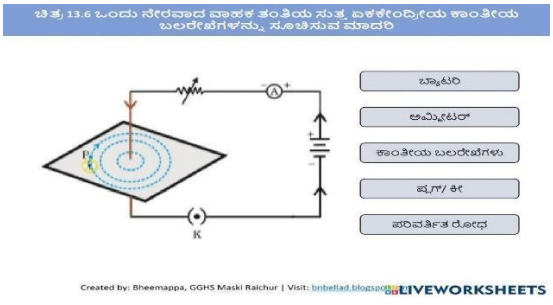
Answer:Overloadcanbecausedbyasuddenincreaseinvoltage, connecting multipleappliances toa singleoutlet (socket),anddirectcontactbetween live andneutralwires.

5. Howshouldhouseholdelectricalappliancesbeconnected?

   Answer:Householdelectricalappliancesshouldbeconnectedinparallel,which helps in saving electricity.

Answerthefollowingquestionsin2-3sentences.(2markquestions)."

1. Drawadiagramshowingconcentriccircularlinesofmagneticforcearounda straightcurrent-carryingconductor.




2. Whatarethefunctionsofanearthwire?

Answer:Theearthwireis usedforthesafetyof electricalapplianceswithmetallic surfacesinresidentialandcommercialelectricalsystems.Itchannelsexcesscharge flowingthroughthesystemsafelytotheground,therebyneutralizingit.

3. Whyisitnecessarytoearthelectricalappliances withmetallicsurfacesinhousehold electrical systems?

Answer:Itreducesresistance,ensuresthatanyelectricleakageintheappliancesis equalizedwiththeearthpotential,andprovidesprotectionfromelectricshocks.

4. Howdoyouidentifythemagneticfieldlinesaroundabarmagnet?

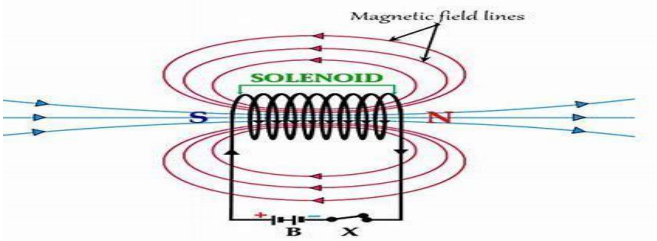
Answer: Place a bar magnet and a compass on a sheet of white paper. Starting fromanypoint,movethecompasstodifferentpositions,markingthedirection withapencil.Connectingallthesepointswillrevealthemagneticfieldlines.

5. Writethecharacteristicsofmagneticfieldlines.

Answer:

1) Theydonotintersecteachother.
2) Theyoriginatefromthenorthpoleandendatthesouthpole.
3) Thedensityoflinesishighernearthemagneticpoles.
4) Whiletheyappearto move fromnorth tosouth outside the magnet,they travel from south to north inside the magnet.

6. Drawasolenoidandlabelitsparts.




7. Whatisasolenoidandwhatisitsuse?

Answer:Asolenoidisacylindricalshapeformedbytightlywoundcoilsofcopperwire carryingan electric current. Solenoids are usedto generateelectromagnetic fields,controlelectricalcircuits(turningthemonoroff),andinhydraulicmachines.

8. DefineFleming'sRight-HandRule.

Answer:"Whenyouholdastraightconductorwithelectriccurrentinyourrighthand,with thethumb,indexfinger,andmiddlefingermutuallyperpendicular,theindexfinger indicatesthedirectionofthe magneticfield,themiddle finger indicatesthedirectionof theelectriccurrent,andthethumbindicatesthedirectionoftheforceontheconductor."

9. DefineFleming'sLeft-HandRule.

Answer:"Whenyouholdyourlefthandwiththethumb,indexfinger,andmiddlefinger mutuallyperpendicular,theindexfinger indicatesthe directionof the magneticfield, the middle finger indicates thedirectionof the electriccurrent,andthe thumbindicates the direction of theforce acting ontheconductor."

10. Whatisashortcircuitandhowcanitbe prevented?

Answer:Ashortcircuitoccurswhenliveandneutralwiresaccidentallycomeinto direct contact, or during anoverload, causinganinterruption in theelectricconnection.Itcan be prevented by installing fuses and taking precautions to avoid overloads.

**Chapter-3.Light,Reflection,andRefraction**

Forthefollowingquestionsorincompletestatements,fouralternativeanswersare provided.Choosetheappropriateanswerfromthemandwritethecompleteanswerwith the corresponding letter.

1. Whichofthefollowingmaterialsisnotusedinthemanufactureoflenses?

   a) Water b) Glass c) Plastic d)Clay

   Answer:Plastic

2. Theimageformedbyaconcavemirrorisvirtual,erect,andlargerthantheobject. Thus, the position of the object is:

   a) Betweentheprincipalfocusandthecenterofcurvature

   b) Atthecenterofcurvature

   c) Beyondthecenterofcurvature

   d) Betweenthepoleandtheprincipalfocus

   Answer:Betweenthepoleandtheprincipalfocus

3. Whattypeofmirrorisusedasarear-viewmirrorinvehicles?

   a) Plane

   b) Concave

   c) Convex

   d) Plane or Convex

   Answer:Convex

4. Whenlightstrikesasmoothsurfaceandreturnstothesamemedium,itiscalled:

a) Refraction

b) Reflection

c) Dispersion

d) Noneoftheabove

Answer:Reflection

5. Theprocessoffocusingordefocusingoflightinalensisknownas:

a) Power

b) Strength

c) Magnification

d) Dispersion

Answer:Power

Answerthefollowinginonesentence(onemark)

1. Whatisreflectionoflight?

Answer:Reflectionof lightiswhen lightstrikesa smooth surfaceandreturns to the same medium.

2. Whereareconcavemirrorsused?

Answer:Concavemirrorsareusedintorches,searchlights,and vehicleheadlightsto obtainapowerfulparallelbeamoflight,andinshavingmirrorsanddentalinstruments.

3. Whatisthereasonacoinplacedinwaterappearstoberaised?

Answer:Thereasonislightrefraction.

4. Whatistherefractiveindex?

Answer:Therefractiveindexisthemeasureofthechangeindirectionthatoccurs when light passes from one medium to another, relative to the two media.

5. Whatistheinternationalunitofpowerofalens?

Answer:Diopter(D)

Answerthefollowing2-3sentences(2marks)

1. Whatisrefractionoflight?

Answer:Refractionoflightoccurswhenlightchangesdirectionasit passesfromone medium with a differentdensityto another medium.Thisbendingoflightisknown as refraction.

2. Whatarethecharacteristicsoftheimageformedbyaplanemirror?

Answer:

1. Theimagesformedbyaplanemirrorarealwaysvirtualanderect.
2. Thesizeoftheimageisequaltothesizeoftheobject.
3. Theimageislocatedasfarbehindthemirrorastheobjectisinfrontofit.

3. Statethelawsofreflectionoflight.

Answer:

1. Theincidentray,thepoint ofincidence,and the reflected rayalllie inthe same plane.
2. Theangleofincidenceisequaltotheangleofreflection.

4. Statethelawsofrefractionoflight.

Answer:

1. Theincidentray,therefracted ray,and thenormal atthepoint ofincidenceall lie in the same plane.

2. For a given pair of media and a specific color of light, the ratio of the sines of the angleofincidenceandtheangleofrefractionis constant.Refractiveindex =sini/ sinr

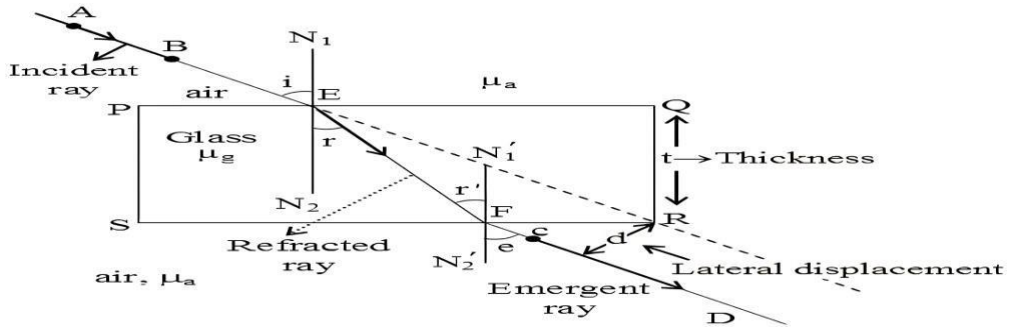
5. Statethemirrorformula.

Answer:The mirror formula relates the objectdistance (u),theimagedistance(v),and the focal length (f) of a mirror. The formula is 1/v + 1/u = 1/f

6. Whatismagnificationofamirror?

Answer:Themagnificationofa mirrorindicateshowmuchlargeror smalleran image appears relative to thesize of theobject.Itisexpressed asthe ratioofthe heightofthe image to the height of the object.

7. Drawadiagramoflightrefractionthrougharectangularglassslabandlabelitsparts.



8. Eyedoctorssometimesprescribe+2.0Dor-2.5Dlenses.Whatdoesthismean?

Answer:Thisindicatesthepowerofcorrectivelensesneededforvisioncorrection. +2.0 D means a convex lens is required for farsightedness, while-2.5 D means aconcave lens is needed for nearsightedness.

**Chapter-4:TheHumanEyeandtheColorfulworld**

Forthefollowingquestionsorincompletestatements,fouralternativeanswersare provided.Choosetheappropriateanswerfromthemandwritethecompleteanswerwith the corresponding letter.

1. Throughwhichpartofthehumaneyedoeslightenter?

a) Retinab) Cornea c) Iris d)Pupil

Answer: Cornea

2. Theabilityofthehumaneyetoadjusttodifferentfocallengthsiscalled:

a) Papilla

b) DistanceVision

c) Accommodation

d) BlindSpot

Answer:Accommodation

3. Theminimumdistanceatwhichanobjectmustbefromtheeyetobeseenclearlyis:

a) 17cm

b) 25cm

c) 25m

d) 17m

Answer:25cm

4. Theabilitytoseenearbyobjectsclearlyisreferredtoas:

a) Nearsightedness

b) Farsightedness

c) Cataract

d) Noneoftheabove

Answer:Nearsightedness

5. Nearsightednesscanbecorrectedusing:

a) Convexlens

b) Concavelens

c) Planelens

d) Convex-concave lens

Answer:Concavelens

6. Farsightednesscanbecorrectedusing:

a) Convexlens

b) Concavelens

c) Planelens

d) Convex-concave lens

Answer:Convexlens

7. Inthedispersionoflight,thecolorthatbendstheleastis:

a) Blue b) Red c) Violet d)Green

Answer: Red

8. Inthedispersionoflight,thecolorthatbendsthemostis:

a) Blue

b) Red

c) Violet

d) Green

Answer:Violet

9. Thefirstscientisttouseaglassprismtostudythedispersionofsunlightwas:

a) Albert Einstein

b) ThomasAlvaEdison

c) SirIsaacNewton

d) AlfredNobel

Answer:SirIsaacNewton

Answerthefollowinginonesentence(1Mark)

1. Whatisacataractinthe eye?

Answer: Acataract is whenthe retinaappears swollen orcloudy, resemblinga milk-whitefilm orfoggy atmosphere,oftenseen in olderindividuals.

2. Whatarethecausesofnearsightedness?

Answer:

1. Excessivecurvatureoftheeye'slens
2. Theeyeballbeingtoolongfromfronttoback

3. Whatisfarsightedness?

Answer: Farsightedness is a conditionwhereapersoncanseedistant objects clearly but has difficulty seeing nearby objects.

4. Whatisthecauseoffarsightedness?

Answer: Farsightedness is usually caused by the lens of the eye being too flat or the eyeballbeingtooshort.

5Whatispresbyopia?

Answer:Presbyopiaisaconditioncommonlyseeninolderindividualswheretheability of the eye to focus on nearby objects is diminished, making it difficult to see close objectsclearlywithout glasses.

6Whatcausespresbyopia?

Answer: Presbyopia is caused by the loss of elasticity in the eye's lens or weakening oftheciliarymuscles.

7. Whatisdispersionoflight?

Answer:Dispersionoflightistheprocessbywhichwhitelightisseparatedintoits component colors, each having different wavelengths.

8. Whatisarainbow?

Answer:Arainbowisanaturalspectrumoflightappearinginthesky,createdbythe dispersion of light through tinywater dropletsin the atmosphereafter rainfall.

9. Whydostarstwinkle?

Answer:Starstwinkledueto the refractionoftheir lightbythe Earth'satmosphere, which causes the stars to appear to flicker.

10. Whydoplanetsnottwinkle?

Answer: Planets do not twinkle because they are closer to Earth and appear as extended sources oflightrather than pointsoflight,reducing theeffectofatmospheric distortion.

11. WhatistheTyndall effect?

Answer:The Tyndalleffectisthe scatteringoflightbyparticlesina colloid or infine suspensions, which makes the path of light visible.

Answerthefollowingin2-3sentences(2marksonly)

1. Givereasonsforthefollowing:

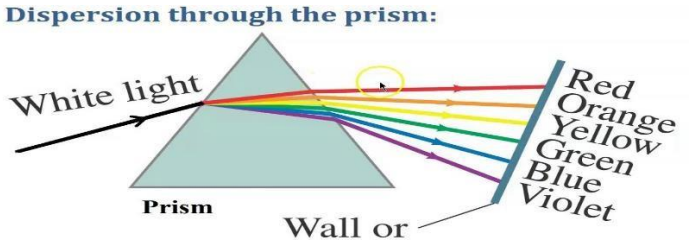
a) Whyisthecoloroftheskyblue?

Answer: The sky appears blue because the air molecules and small particles in the atmosphere scatter shorter wavelengthsof light (blue) moreeffectivelythanlonger wavelengths.

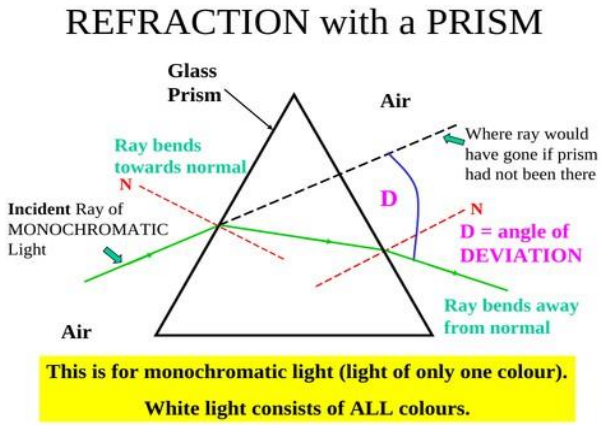
b) Whydoestheskyappearblacktoastronauts?

Answer: Astronauts see the sky as black because, at high altitudes beyond the Earth's atmosphere, there is no atmosphere to scatter sunlight, so no scattering of light occurs.

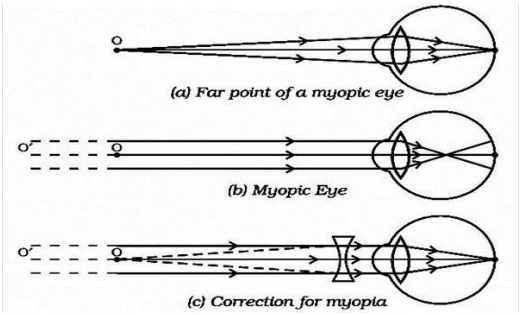
2Drawandlabelthedispersionoflightinaglassprism.



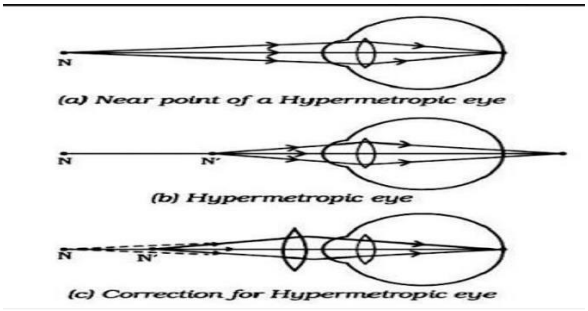

3. Drawandlabelthedispersionoflightthroughatriangularprism.




4. Drawandlabeladiagramshowingnear-sightednessanditscorrection.




5. Drawandlabeladiagramshowingfar-sightednessanditscorrection.




## “Chemistry”

ChapterQuestions:

Chapter-1ChemicalReactionsandEquations

I. Foreachofthefollowingquestions,fouroptionsareprovided.Choosethe correct answer and write it with the corresponding letter. (1 mark for each question)

1. In a chemical equation, the reactants are a)Writtenbeforethe arrow sign

   b)Writtenafterthearrowsign c)Writtenabovethearrowsign

   d) Written before the products Answer:b)Writtenafterthe arrow sign

2. Theoutcomeofachemicalreactioniscalled a)Reactantb)Catalyst c) Productd)HeatAnswer:c)Product

3. Intheequation"Zinc+SulfuricAcid→ZincSulfate+Hydrogen,"the products formed are

   a) Zincb)ZincSulfatec)Hydrogend)Bothbandc

   Answer: d) Both b and c

4. Inachemicalequation,thesymbol(s)representsthestate

   a) Solidb)Liquidc)Gasd)Plasma Answer:a)Solid

5. Thesymbols(l)&(g)inachemicalequationrepresentthestates

   a) Solid & Gasb) Liquid & Solid c) Liquid & Gas d)Gas&Molten

   Answer: c) Liquid & Gas

6. Thechemicalformulaforquicklimeisa)CaOb)CaCO3c)CO2d)CO

   Answer: a) CaO

7. Thechemicalnameandformulaforslakedlime

   a) CalciumOxide–CaO b)CalciumHydroxide-Ca(OH)2
   c) Calcium Carbonate - CaCO3 d)CarbonDioxide-CO2

   Answer: b) Calcium Hydroxide - Ca(OH)2

8. Thecolorofferroussulfatecrystalsis

a) Greenb)Yellowc)Liquid&Gasd)Gas&Molten

Answer: a) Green

9. Thebrownfumesproducedwhenleadnitrateisthermallydecomposed

   a) LeadOxide–PbO b)Oxygen-O2 c)NitrogenDioxide-$NO_2$

   d) Bothb&c

**Answer:**NitrogenDioxide-$NO_2$

10. Chemicalreactionthatoccurswiththehelpofsunlight:

    a) $AgCl \rightarrow Ag+Cl_2$
    b) $AgBr \rightarrow Ag+Br_2$
    c) $C_6H_{12}O_6+O_2 \rightarrow CO_2+H_2O$
    d) Botha&b
    **Answer:**d)Botha&b

II. Answerthefollowingquestionsinonesentence(1markeach):

11. Whatisachemicalcombination?
    Answer:Achemicalreactioninwhichtwoormorereactantscombineto form a single product.

12. Definechemicaldecomposition.
    Answer:Achemicalreactioninwhichasinglereactantbreaksdowninto two or more products.

13. Whatarethetypesofchemicalreactions?
    Answer:Chemicalcombination,chemicaldecomposition,chemical displacement, and double displacement.

14. Whattypeofchemicalreactionisthecombustionofcoal?
    Answer: Chemical combination.

15. Whydoesferroussulfateloseitsgreencolorwhenheated?
    Answer: Due to thermal decomposition, it loses water.

16. Whatisathermaldecompositionreaction?
    Answer:Achemicaldecompositionreactionthatoccursthroughheating.

17. Whydoessilverchlorideturngreyinsunlight?
    Answer:Silverchloridedecomposesintosilverandchlorineinsunlight.

18. Whatisanendothermicreaction?
    Answer:Achemicalreactioninwhichheatorenergyisabsorbed.

19. Whatisoxidation?
    Answer:Achemicalreactioninwhichasubstancegainsoxygen.

20. Whatisreduction?
    Answer:Achemicalreactioninwhichasubstancelosesoxygen.

21. Why is nitrogen gas passed into chip packets?
    Answer:Topreventthechipsfrombecomingsoggy.

22. What change occurs when copper undergoes corrosion?
    Answer:Agreencoatingappearsonthesurfaceofcopper.

23. Whatchangeoccurswhensilverundergoescorrosion?
    Answer: A black coating appears on the surface of silv

24. Whatchangeoccurswhenironundergoescorrosion?
Answer: Iron forms rust.

25. Whatisrust?
Answer:Theaqueousoxideofironiscalledrust.

26. Whatisaprecipitate?
Answer:Asubstancethatisformedduringachemicalreactionandis insoluble in water is called a precipitate.

III. Answerthefollowingquestionsintwosentences(2markseach)

27. Writethedifferencebetweenchemicalcombinationandchemical decomposition (mention any two points):

Answer:

| ChemicalCombination | ChemicalDecomposition |
|---|---|
| 1. Twoormorereactants. | Onereactant. |
| 2. Oneproduct. | Twoormore products |
| 3. Example: $H_2 + O_2 \rightarrow H_2O$ | Example:$FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$ |

28. Writethedifferencebetweenoxidationandreduction(mentionanytwo points):

Answer:

| Oxidation | Reduction |
|---|---|
| 1. Theprocessoflosingoxygen. | 1)Theprocessofgainingoxygen. |
| 1. Theprocessofgainingelectrons. | 2)Theprocessoflosingelectrons |
| 2. Theprocessofgaininghydrogen. | 3)Theprocessoflosinghydrogen. |
| 3. Example:$CuO+H_2 \rightarrow Cu+ H_2O$ | 4)Example:$C+O_2 \rightarrow CO_2$ |

29. Whatisaredoxreaction?Giveanexample.

Answer:Areactioninwhichonereactantundergoesoxidationwhileanother undergoes reduction.

Example:$CuO+H_2 \rightarrow Cu+H_2O$ or $ZnO+C \rightarrow Zn+CO$

30. Whatarecorrosionandrancidity?

Answer:Corrosionistheprocessbywhichmetalsareattackedbysubstances like moisture and acids from their surroundings. Rancidity is the process of oxidation of fats and oils.

31. Writeoneequationeachforachemicaldisplacementandadouble displacement reaction.

Answer:
DisplacementReaction:$Fe+CuSO_4 \rightarrow FeSO_4+Cu$
DoubleDisplacementReaction:$Na_2SO_4+BaCl_2 \rightarrow BaSO_4+2NaCl$

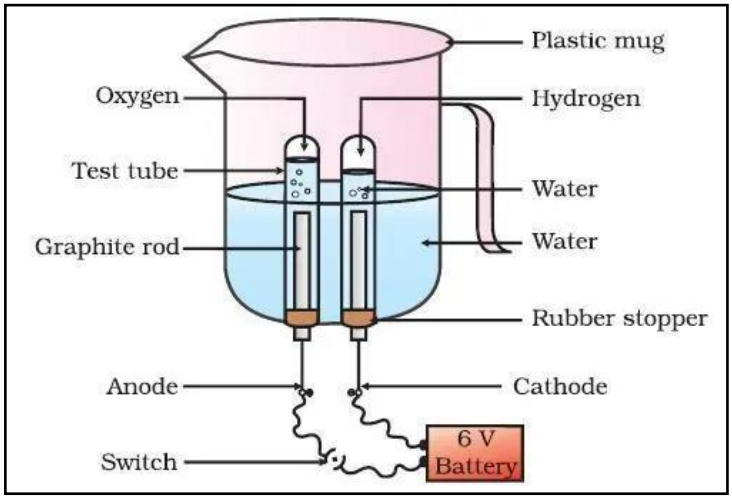
32. Writethedifferencebetweenendothermicandexothermicreactions:

Answer:

| EndothermicReaction | ExothermicReaction |
|---|---|
| 1. Thereactionabsorbsheat/energy. | Thereactionreleasesheat/energy |
| 2. Example:$AgCl \rightarrow Ag+Cl_2$ | Example:$CH_4+2O_2 \rightarrow CO_2+2H_2O$ |

**IV. Answerthefollowingquestion(3/4markseach):**

**33. Drawaneatdiagramoftheelectrolysisofwaterandlabeltheparts.**




**Chapter-SpecificQuestions:Chapter2–Acids,Bases,andSalts**

**I. Choosethecorrectanswerfromthegivenoptionsandwritetheanswer with the appropriate letter. (1 mark each):**

1. ThepHvaluerangeofanacid:

   A) 0-7

   B) 2 -12

   C) 7-14

   D) 12-14

**Answer:**A)0- 7

2. Asthenumberofhydrogenionsincreasesinasolution:

   A) Itbecomesneutral

   B) Thebasicityincreases

   C) Theacidityincreases

   D) Theaciditydecreases

**Answer:**C)Theacidityincreases

3. Thegasreleasedwhendilutesulfuricacidisaddedtoametal:

   A) Oxygen

   B) Nitrogen

   C) Hydrogen

   D) Carbon

**Answer:**C)Hydrogen

**4. Theproductsformedwhenanacidismixedwithametal:**

   A) Metaloxide&water

   B) Metaloxide&hydrogengas

   C) Salt&water

   D) Salt&hydrogengas

   **Answer:**D)Salt&hydrogengas

**5. Themolecularformulaofsodiumzincate:**

   A) NaZnO

B) NaZn

C) $NaZnO_2$

D) $NaZnO_3$

**Answer:**D)$NaZnO_3$

**6. Themolecularformulaoflimewater:**

A) CaO

B) $Ca(OH)_2$

C) $CaCO_3$

D) $CO_2$

**Answer:**B)$Ca(OH)_2$

**7. Thechemicalequationthatrepresentsneutralization:**

A)$H_2$+ $O_2$→$H_2O$

B) C+$O_2$→$CO_2$

C) HCl+NaOH→ NaCl+$H_2O$

D) Mg+$O_2$→MgO

**Answer:**C)HCl+NaOH→ NaCl+$H_2O$

**8. Thereasonfortheblue-greencolorwhenhydrochloricacidisaddedto copper oxide solution:**

A) Copperoxide

B) Copperhydroxide

C) Water

D) Copperchloride

**Answer:**D)Copperchloride

**9. Theproductsformedwhensodiumhydroxideismixedwithwater:**

A) Sodium&water

B) Hydroxide&water

C) Sodium&hydroxide

D) Sodium&oxide

**Answer:**C)Sodium&hydroxide

**10. Acidshouldbeaddedtowaterandnotwatertoacidbecause:**

A) Itisanexothermicreactionandcancauseanexplosion.

B) Itisanendothermicreactionandcancauseanexplosion.

C) Itwillnotmix.

D) Itmixesveryslowly.

**Answer:**A)Itisanexothermicreactionandcancauseanexplosion.

**11. Theacidproducedinthestomach:**

A) Sulfuricacid

B) Hydrochloricacid

C) Nitricacid

D) Methanoic acid

**Answer:**B)Hydrochloricacid

**12. Amildbaseusedasanantacidtoneutralizeexcessacidityinthestomach:**

A) Magnesiumhydroxide

B) Sodiumhydroxide

C) Potassiumhydroxide

D) Calciumhydroxide

**Answer:**A)Magnesiumhydroxide

**13. Theacidfoundinnettleplants:**

A) Ethanoicacid

B) Methanoic acid

C) Propanoicacid

D) Tartaricacid
**Answer:**B)Methanoicacid

**14. Thereasonforusingtoothpasteonteeth:**

A) Itisanacid

B) Itsweetensthemouth

C) Itisabase

D) Fortaste
**Answer:**C)Itisabase

**15. Brinesolutionrefersto:**

A) Sodiumhydroxidesolution

B) Sodiumchloridesolution

C) Potassiumhydroxidesolution

D) Potassiumchloridesolution
**Answer:**B)Sodiumchloridesolution

**16. TheproductoftheChlor-Alkaliprocessusedintheproductionofartificial butter:**

A) Chlorinegas

B) Sodiumhydroxide

C) Sodiumchloride

D) Hydrogengas
**Answer:**D)Hydrogengas

**17. Thesaltusedasarawmaterialinglassmanufacturing:**

A) Chalkpowder

B) Washingsoda

C) Bakingsoda

D) Tablesalt

**Answer:**B)Washingsoda

**18. ThechemicalnameofPlasterofParis:**

A) Calciumsulfate

B) Calciumsulfatehemihydrate

C) Calciumsulfonate

D) Potassiumsulfate

**Answer:**B)Calciumsulfatehemihydrate

**19. Thereasonwhyblue-coloredcoppersulfateturnswhitewhenheated:**

A) Duetogainingwater

B) Duetoexcesswater

C) Duetolosingwater

D) Duetodissolvinginwater

**Answer:**C)Duetolosingwater

**20. Thecauseoftoothdecay:**

A) Acidproducedinthemouth

B) Baseproducedinthe mouth

C) Saltproducedinthemouth

D) Drinkingwater

**Answer:**A)Acidproducedinthemouth

**II. Answerthefollowingquestionsinonesentence:** (1markeach)

**21. Howcanyoudetectanacidusinglitmuspaper?**

**Answer:**Bluelitmuspaperturnsredinacid,whileredlitmuspaperdoesnot change color in acid.

**22. Whatisan acid?**

**Answer:**AsolutionwithapHrangefrom0to7iscalledanacid.

**23. Write a chemical equation showing the reaction of a metal with a base. Answer:** $2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2$

**24. What precipitate is formed when air is blown into limewater? Answer:** Calcium carbonate ($CaCO_3$)

**25. Whichgasisreleasedwhenacidsreactwithmetalcarbonatesandmetal hydrogen carbonates?**
**Answer:**Carbondioxide($CO_2$)

**26. Whataretheproductsformedwhencarbonatesandhydrogencarbonates react with acids?**
**Answer:**Salt,carbondioxide,andwater.

**27. Whyaremetaloxidescalledbasicoxides?**
**Answer:**Metaloxidesarecalledbasicoxidesbecausetheyreactwithacidsto form salt and water, similar to a base.

**28. Whyarenon-metaloxidescalledacidicoxides?**
**Answer:**Non-metaloxidesarecalledacidicoxidesbecausetheyreactwith bases to form salt andwater, similar to an acid.

**29. Whatarealkalis?**
**Answer:**Alkalisarebasesthatdissolveinwater.

**30. Whichionisproducedwhenanaciddissolvesinwater?**
**Answer:** Hydronium ion ($H_3O^+$)

**31. Whathappenswhenthenumberofhydroxideionsina solution increases?**
**Answer:**Thebasicity(oralkalinity)ofthesolutionincreases,orthepHvalue increases.

**32. WhatisthepHvalueofacidrain?**
**Answer:** Less than 5.5

**33. Whatisthechemicalnameofbleachingpowder?**
**Answer:** Calcium oxychloride

**34. Writethechemicalequationforthepreparationofbleachingpowder.**
**Answer:** $Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O$

**35. Whatisbakingpowder?**
**Answer:**Bakingpowderisamixtureofbakingsodaandtartaricacidusedin cooking.

**III. Answerthefollowingquestionsintwosentences:**(2markseach)

**39. Writetwodifferencesbetweenacidsandbases.**

| **Answer:** | **Acids** | **Bases** |
|---|---|---|
| 1. | Haveasourtaste | Haveabittertaste |
| 2. | pHrangefrom0to7 | pHrangefrom7to14 |
| 3. | Have excess hydrogen ions ions | Haveexcesshydroxide |
| 4. | Bluelitmusturnsred | Redlitmusturnsblue |
| 5. | Example:HCl | Example:NaOH |

**40. Whataretheusesofchlorinegasproducedinthechlor-alkaliprocess?**
**Answer:**Waterpurification,PVC production, disinfectants,CFC production, insecticide manufacturing.

**41. Writetwousesofsodiumhydroxide.**
**Answer:**Removingstubbornstainsfrommetals,manufacturingsoapsand detergents, paper and synthetic fiber production.

**IV. Answerthefollowingquestions:**(3/4markseach)

**42. Listthreeusesofwashingsoda.**
**Answer:**

A) Usedinglass,soap,andpaperindustries

B) Usedintheproductionofsodiumcompoundslikeborax

C) Usedasahouseholdcleaner

D) Usedintheremovalofpermanenthardnessofwater

**43. Listthreeusesofbleachingpowder.**
**Answer:**

A) Usedtobleachcottonandlineninfabric industries

B) Usedtobleachwoodpulpinpaperindustries

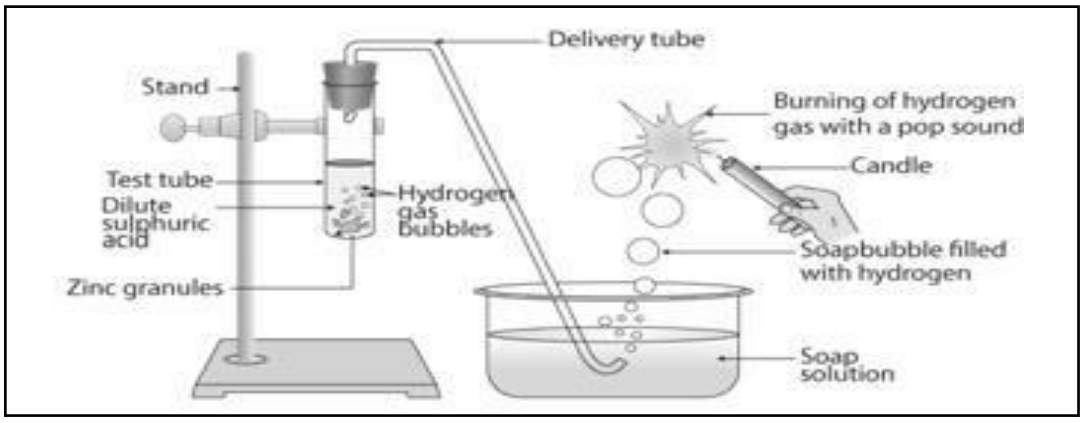
C) Usedtobleachlaundryinlaundries

D) Usedasanoxidizingagentinchemicalindustries topurifydrinking water from germs.

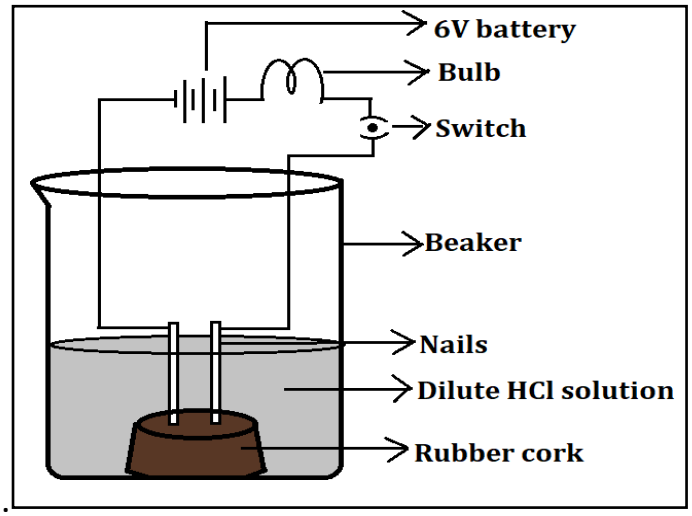
**44.** Writethechemicalequationforthepreparationofgypsumandlisttwo uses.
**Answer:**
**ChemicalEquation:**CaSO4.1/2H2O+1½H2O→CaSO4.2H2O
**Uses:**

- Manufactureofplaster
- Productionofdecorativeitems
- Creatingsmoothsurfaces

**45.** Drawthediagramforthereactionofsulfuricacidwithironfilingsandthe test for hydrogen gas through combustion. Label the parts.




**46.** Drawthediagramfortheelectrolysisofanacidicsolutionandlabelthe parts




**Chapter-wiseQuestions:Chapter-3:MetalsandNonMetals**

I. Choosethecorrectanswerforeachofthefollowingquestions,selectingfrom the four options given. (1 mark per question)

1. Themetalwiththehighestdensity

a) Gold

b) Copper

c) Iron

d) Lead

Answer:a)Gold

2. Metalswiththehighestductility

a) Gold

b) Copper

c) Silver

d) Bothaandc

Answer:d)Bothaandc

3. Thebestconductorsofheat

a) Gold

b) Copper

c) Silver

d) Bothbandc

Answer:d)Bothbandc

4. Thepoorconductorsofheat

a) Lead

b) Rubber

c) Silver

d) Bothaandb

Answer:d)Bothaandb

5. Theinsulationonelectricalwiresismadeofplasticorrubberbecause

a) Theylookattractive

b) Theyhaveinsulatingproperties

c) Theyarereadilyavailable

d) Theyaremoreexpensive

Answer:b)Theyhaveinsulatingproperties

6. Thesubstancethatglows

a) Iodine

b) Dye

c) Sulfur

d) Carbon

Answer:a)Iodine

7. Thegroupofalkalimetals

a) Sodium,Iron,Lithium

b) Sodium,Potassium,Iron

c) Sodium,Dye,Potassium

d) Sodium, Lithium, Potassium

Answer:d)Sodium,Lithium,Potassium

8. Aformofcarbonwithahard,crystallinestructure

a) Graphite

b) Diamond

c) Fullerene

d) Charcoal

Answer:b)Diamond

9. Metalswiththelowestmeltingpoints

a) GalliumandCesium

b) SodiumandPotassium

c) SodiumandGallium

d) Potassium and Cesium

Answer:a)GalliumandCesium

10. Productsformedwhenmetalsdissolveinwater

Answer: b) Acidic oxides

11. Amphotericoxideis

a) Potassiumoxide

b) Sodiumoxide

c) Magnesiumoxide

d) Aluminumoxide

Answer:d)Aluminumoxide

12. Productsformedwhenmetalsreactwithoxygen

a) Alloyoxides
b) Metalhydroxides
c) Metaloxides
d) Alloy hydroxides
Answer:c)Metaloxides

13. Metalsthatreactwithair

a) Iron b) Aluminumc) Zinc d)Alloftheabove

Answer: d) All of the above

14. Thereasoncalciumfloatsonwateristhatcalciumreactswithwaterto produce

a) Hydrogen
b) Oxygen
c) Chlorine
d) Heat
Answer:a)Hydrogen

15. Metalsthatreactwithcoldwatertoreleaseheat

a) SodiumandIron
b) SodiumandPotassium
c) IronandCopper
d) CopperandZinc
Answer:b)SodiumandPotassium

16. Metalthatreactswithhotwater

a) Iron
b) Gold
c) Copper

d) Magnesium
Answer:d)Magnesium

17. Themostpowerfuloxidizingagent

a) HNO3
b) H2SO4
c) CO
d) KMnO4
Answer:a)HNO3

18. Themostreactivemetals

a) Sodium
b) Titanium
c) Potassium
d) Bothaandc
Answer:d)Bothaandc

19. Theleastreactivemetalschemically

a) Lead
b) Gold
c) Silver
d) Allofthe above
Answer:d)Alloftheabove

20. Theequationindicatingthereactionbetweenmetalsandacids

a) Na+Cl2→NaCl
b) H2+Cl2 → HCl
c) H2+ O2→H2O
d) H+ +OH-→H2O
Answer:a)Na+ Cl2→ NaCl

21. Metalsfoundintheirfreestate

a) Gold,Silver,Iron,andCopper
b) Gold,Silver,Lead,andCopper

c) Gold,Silver,Platinum,andCopper
d) Gold,Silver,Tin,andCopper
Answer:c)Gold,Silver,Platinum,andCopper

22. TheoreofMercuryanditsformula

a) Chalcopyrites-CuSO4
b) CopperGlance -CuO
c) Hematite-Fe2O3
d) Cinnabar-HgS
Answer:d)Cinnabar-HgS

23. Electrolyticsolutionusedinthepurificationofcopper

a) CuSO4
b) CuO
c) Cu2O
d) CuCl2
Answer:a)CuSO4

24. Chemicalprocessusedtoweldrailwaytracks

a) Electrolysis
b) Thermitereaction
c) Metallurgy
d) Electroplating
Answer:b)Thermitereaction

II. Answerthefollowingquestionsinonesentence.(1markperquestion)

25. Whatarealkalimetals?

Answer:Alkalimetalsarethosethatreactwithwatertoproducealkalis.

26. Whatisanallotrope?

Answer:Anallotropeisaphenomenonwhereanelementoccursinmore than one form in nature.

27. Whatistheallotropeofcarbonthatisagoodconductor

Answer Graphite

28. Whichmetalisinliquidformatroomtemperature

Answer: Mercury

29. Whatisasonorousmetal

AnswerAmetalthatproducesasoundwhenstruckonahardsurfaceis called a sonorous metal.

30. Whatisanamphotericoxide?

Answer:Amphotericoxidesaremetaloxidesthatreactwithbothacidsand bases to produce saltsand water.

31Stateonepropertyofalkalimetals

AnswerAlkalimetalsareverysoftandcanbecutwithaknife.

32. Whatisanodemud?

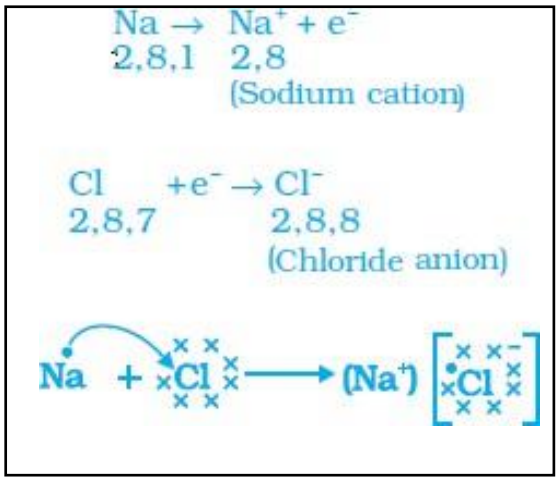
Answer:Inelectrolysis,theinsolubleimpuritiesthatsettleatthebottomofthe anode are calledanode mud.

33. Whatisgalvanization?

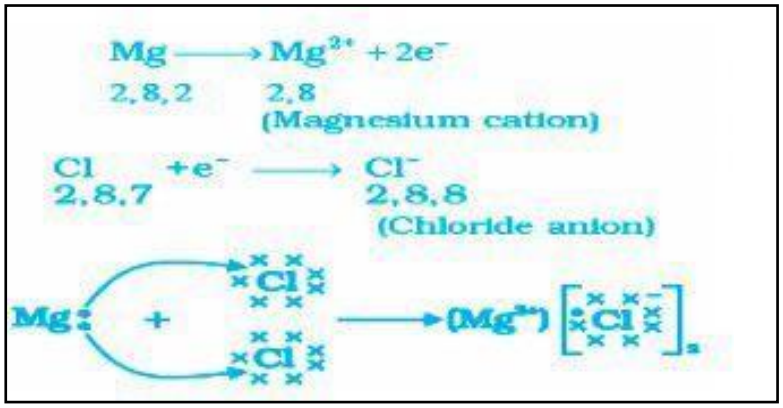
Answer:Galvanizationistheprocessofcoatingironandsteelwitha layer of zinc to protect them from rusting.

III. Answerthefollowingquestionsintwosentences.(2marksperquestion)

34. Writetheelectronconfigurationfortheformationofsodiumchloride.




35. Writetheconfigurationfortheformationofmagnesiumchloride.




36. Whatisanalloy?Giveoneexample.
Answer:Analloyisahomogeneousmixtureoftwoormoremetals.An example is bronze, which is a mixture of copper and tin.

37. Whichcomponentmetalsarepresentinsolderusedforelectrical connections? Why is solder used in electrical connections?
Answer : Solder typically contains lead and tin. It is used in electrical connectionsbecauseitmeltsatalowtemperatureandsolidifiesquickly, creating a strong, conductive joint.

**38. Writethechemicalequationsforobtainingcopperfromcinnabar.**

**Answer:** $2HgS+3O_2 \longrightarrow 2HgO+2SO_2$

$2HgO \longrightarrow 2\ Hg + O_2$

**39. Writethechemicalequationsforseparatingcopperfromcoppersulfide.**
**Answer:**

$2Cu_2S+ 3O_2 \longrightarrow 2CuO+2SO_2$

$2Cu_2O+Cu_2S \longrightarrow 6Cu+ SO_2$

**40. Writethedifferencebetweenroastingandcalcination.**
**Answer:**

| Roasting | Calcination |
|---|---|
| 1. Converting sulfide ores into oxides. | 1.Convertingcarbonate ores into oxides. |
| 2. Performed in the presence of excess air. | 2.Performedinthe presence of limited air. |
| 3. Example:$ZnS+3O_2 \rightarrow 2ZnO+2SO_2$ | 3.Example:$ZnCO_3 \rightarrow ZnO+CO_2$ |

41PhysicalDifferencesBetweenMetalsandAlloys

| Metals | Alloys |
|---|---|
| 1. Theyshineorhavealuster. | 1.Donotshine. |

2. Solidatroomtemperature.2.Canbeinsolid,liquid,orgaseousstate at room temperature

3. Good conductors of electricity. 3.Poorconductorsofelectricityor non-conductors.

4. Good conductors of heat. 4.Poorconductorsofheator insulators.

5. Malleable. 5.Notmalleable.

6. Ductile. 6.Notductile.

42. Whatisthermitereaction?Giveexamples

**Thermite Reaction**

**Definition:** The thermite reaction is a high-temperature reaction that involvesmixingamorereactivemetalwithmetaloxidestoseparatethe metal from the compound, releasing a significant amount of heat.

**Equation:**

$Fe_2O_3+2Al \rightarrow 2Fe+Al_2O_3+Heat$ or

$3MnO_2+4Al \rightarrow 3Mn+2Al_2O_3$

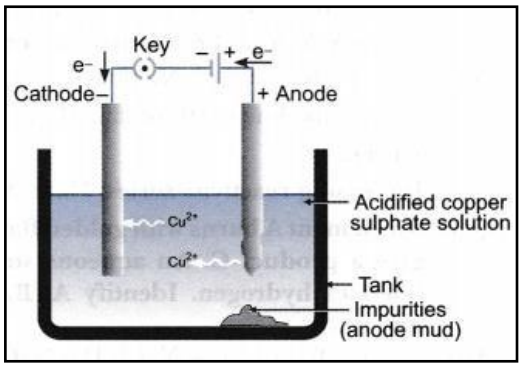
**IV. Answerthefollowingquestions.(Eachquestioncarries03/04marks)**

**43. Writethepropertiesofloniccompounds**

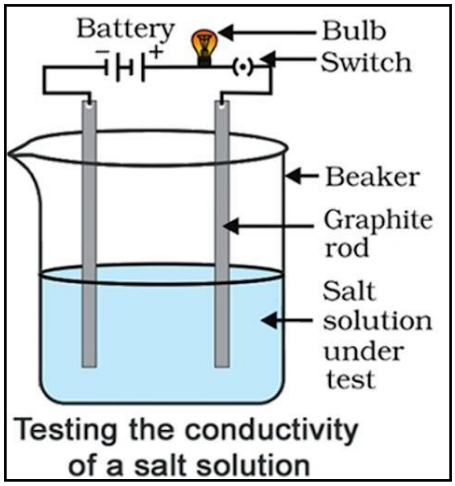
**Properties of Ionic Compounds:**

- Theyexistassolidsandarehard.
- Theyhavehighmeltingandboilingpoints.
- Theydissolveinwaterbutnotinorganicsolvents.
- Theiraqueoussolutionsconductelectricity,buttheydonotconduct electricity in the solid state.

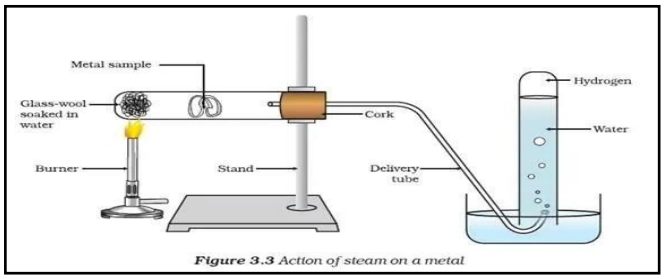
**44. DiagramofElectrolysisofCopper(II)SulfateSolution:**




45. DiagramofTestingtheConductivityofaSaltSolution:




46. DiagramofMetalReactingwithsteam



Chapter-wiseQuestions:Chapter4-CarbonandItsCompounds

**I. Foreachofthefollowingquestions,fouroptionsareprovided.Choosethe correct answer and write it with the sequence letter. (1 mark per question)**

1. **ValencyofCarbon**
   a)1
   b)2
   c) 3
   d)4
   **Answer:d)4**
2. **AromaticCarbonCompound**
   a) Carbonatomsarebondedbytriplebonds
   b) Carbonatomsarebondedbydoublebonds
   c) Carbonatomsarebondedbysinglebonds
   d) Therearenobondsbetweencarbonatoms
   **Answer:c)Carbonatomsarebondedbysinglebonds**

3. **MaximumnumberofbondsasingleCarbonatomcanformwith Hydrogen atoms**
   a)1
   b)2
   c) 3
   d)4
   **Answer:d)4**
4. **NumberofCarbonatomsinEthene**
   a)1
   b)2
   c) 3
   d)4
   **Answer:b)2**
5. **FirstmemberofAlkanes**
   a) Methane
   b) Ethane
   c) Propane
   d) Butane
   **Answer:a)Methane**

6. **FirstmemberofAlkenes**
   a) Methane
   b) Ethane
   c) Ethene
   d) Propene
   **Answer:c)Ethene**
7. **FirstmemberofAlkynes**
   a) Propyne
   b) Ethyne
   c) Butyne
   d) Pentyne
   **Answer:b)Ethyne**
8. **DifferencebetweenanytwoconsecutiveAlkanes/Alkenes/Alkynes**
   a) CH2
   b) CH
   c) CH3
   d) CH4
   **Answer:a)CH2**
9. **SuffixofAromaticCarbonCompounds**
   a) -ene
   b) -ine
   c) -ane
   d) -ol
   **Answer:c)-ane**
10. **SuffixofNon-AromaticCarbonCompounds**
    a) -ene
    b) -ine
    c) -ane
    d) Bothaandb
    **Answer:d)Bothaandb**

11. SuffixforcarboncompoundshavingtheAldehydefunctionalgroup
    a) -ol
    b) -one
    c) -al
    d) -oic acid
    Answer:c)-al

12. Catalystusedinthehydrogenationofoils

a) Nickel
b) Chromium
c) Cobalt
d) Lead
Answer:a)Nickel

13. Oxidizingagentsusedtoconvertethanoltoaceticacid

a) KMnO4
b) K2Cr2O7
c) Eitheraorc
d) Nickel
Answer:c)Eitheraorc

II. Answerthefollowingquestionsinonesentenceeach(1markperquestion)

14. Whatisthesimplestcarboncompound?

Answer: Methane

15. Functionalgrouppresentinaceticacid

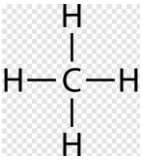
Answer: Carboxylic group

16. Whatisglacialaceticacid?

Answer:Aceticacidthatsolidifiesincoldweatheriscalledglacialacetic acid.

17. Writethemolecularandstructuralformulaofmethane.

Answer: CH4




18. Howmanycovalentbondsarethereinethane?

Answer: 7

19. Generalformulaforalkanes

Answer: CnH2n+2

20. Generalformulasforalkenesandalkynes

Answer: CnH2n & CnH2n-2

21. Whatissaponification?

Answer:Saponificationistheprocessofproducingorganicsaltsbyreacting fatty acids with alkalis.

22. Whatisamicelle?

Answer:Amicelleisthestructureformedwhentheionicendsofsoap moleculesinteractwithwaterwhilethecarbonchainsinteractwithoil.

23. Whatisesterification?

Answer:Esterificationistheprocessofforminganesterbyreactingan alcohol with a carboxylic acid.

23. Whatisesterification?
**Answer:**Esterificationistheprocessofformingestersfromthereaction between an acid and an alcohol.

24. Whatisasubstitutionreaction?
**Answer:**Asubstitutionreactionisaprocesswhereatomsorgroupsofatomsin a molecule are replaced by different atoms or groups of atoms.

25. Whatarethepossibleproductswhencarboncompoundsareburned?
**Answer:**Carbondioxide,water,heat,andlight.

**III. Answerthefollowingquestionsintwosentenceseach(2marksper question)**

26. Writethedifferencesbetweensaturatedandunsaturatedcarbon compounds.

**Answer:**

**SaturatedCarbon Compounds**

1. Singlebondsbetweencarbonatoms
2. Firstmemberismethane
3. Generalformula:CnH2n+2

**UnsaturatedCarbonCompounds**

1. Doubleortriplebondsbetweencarbonatoms
2. Firstmembersareethene/ethyne
3. Generalformulas:CnH2norCnH2n-2

27. Whatareisomers?Whoisthefirstmemberofisomers?

**Answer:**Isomersarecarboncompoundswiththesamemolecularformulabut different structural formulas. The first member of isomers is iso-butane.

28. Whatarehaloalkanes?Giveanexample.

**Answer:**Haloalkanesarecarboncompoundsthatcontainhalogengroups. Example: Chloro-methane.

29. Whatarefunctionalgroups?

**Answer:**Functionalgroupsaregroupsofdifferentatomsthatreplacehydrogen in carbon compounds and determine the type of chemical reaction the compound undergoes.

30. What are hydrocarbons? How many types are there? Name them.

Ans**wer:**Hydrocarbonsarecompoundsmadeofcarbonandhydrogen.There are three types: alkanes, alkenes, and alkynes.

# “Biology”

"Chapter:LifeProcesses"

1. Theroleofchlorophyllinphotosynthesisis_____

   a) Applyingupwardpressure

   b) Absorbingcarbondioxide

   c) Releasingoxygen

   d) Absorbing light energy.

Answer:d)Absorbinglightenergy.

2. Inphotosynthesis,carbondioxideisconvertedinto_____.

   a) Carbohydrates

   b) Proteins

   c) Vitamins

   d) Lipids.

Answer:a)Carbohydrates.

3. Thisnutrientisessentialforautotrophyinplantsandisusedinprotein synthesis. _____

   a) Oxygen

   b) Nitrogen

   c) Carbon

   d) Phosphorus.

Answerb)Nitrogen.

4. Thesalivainthemouthbreaksdownstarchintosugarwiththehelpofthis enzyme _____

a) Pepsin

b) Amylase

c) Renin

d) Trypsin

Answer:b)Amylase.

5. Theacidsecretedbythestomachis_____

a) Nitricacid

b) Sulfuricacid

c) Aceticacid

d) Hydrochloric acid

Answer:d)Hydrochloricacid.

6. Birdsexcretenitrogenouswastesinthisform_____

a) Carbondioxide

b) Urea

c) Ammonia

d) Uric acid

Answer:d)Uricacid.

7. Theenzymethatsecretesmucustoprotectthestomachliningfromtheacid secreted in the stomach is _____

a) Pepsin

b) Amylase

c) Renin

d) Trypsin

Answer:a)Pepsin.

8. Duetothesesubstancesintheirdiet,thesmallintestineofherbivoresis longer than that of carnivores. _____

a) Protein

b) Carbohydrate

c) Cellulose

d) Lipid

Answer:c)Cellulose.

9. Thepartofthedigestivesystemwherecarbohydrates,fats,andproteinsare fully digested.

a) Mouth

b) Smallintestine

c) Largeintestine

d) Stomach

Answer:b)Smallintestine.

10. Thefinger-likestructurethathelpsintheabsorptionofdigestedfoodfrom the small intestine is

a) Enzymes

b) Villi

c) Appendix

d) Liver

Answer:b)Villi.

11. Theorganthatproducesureais_____

a) Pancreas

b) Excretorysystem

c) Lungs

d) Skin

Answer:b)Excretorysystem.

12. Theexchangeofsubstancesbetweenbloodandcellstakesplacethrough _____.

a) Veins

b) Arteries

c) Capillaries

d) Valves

Answer:c)Capillaries

13. Thecomponentofbloodthathelpsintransportis_____.

a) Plasma

b) Redbloodcells

c) Whitebloodcells

d) Platelets

Answer:a)Plasma

14. Theroleofstomataintransportationinplantsis_____.

a) Creating upwardpressure

b) Absorbingcarbondioxide

c) Releasingoxygen

d) Absorbinglightenergy

Answer:b)Absorbingcarbondioxide

15. Theacidreleasedinmusclesduetothebreakdownofglucoseinthe absence of oxygen is _____.

a) Aceticacid

b) Citric acid

c) Lacticacid

d) Tartaric acid

Answer:c)Lacticacid

16. Therespiratorypigmentinhumansis_____

a) diaphragm

b) Airsac

c) Alveoli

d) Hemoglobin

Answer:d)Hemoglobin

17. Thiscomponentofbloodtransportsfood,carbondioxide,andnitrogenous wastes.

a) Plasma

b) Redbloodcells

c) Whitebloodcells

d) Platelets

Answer:a)Plasma

18. Oxygen-richbloodentersthischamberoftheheart._____

a) Leftatrium

b) Rightatrium

c) Leftventricle

d) Right ventricle

Answer:a)Leftatrium

19. Oxygen-depletedbloodentersthischamberoftheheart._____

a) Leftatrium

b) Rightatrium

c) Leftventricle

d) Right ventricle

Answer:b)Rightatrium

20. Thepartoftheheartthatpreventsthebackflowofbloodwhentheatria and ventricles contract is _____

a) Septum

b) Arteries

c) Veins

d) Valves

Answer:d)Valves

21. Thewallthatseparatestheleftventricleandrightventricleoftheheartis _____

a) Septum

b) Arteries

c) Veins

d) Valves

Answer:a)Septum

22. Inthisanimal,bloodpassesthroughtheheartonlyonce._____

a) Reptiles

b) Fish

c) Mammals

d) Amphibians

Answer:b)Fish

23. Thebloodcomponentresponsibleforclottingis_____

a) Plasma

b) Redbloodcells

c) Whitebloodcells

d) Platelets

Answer:d)Platelets

24. Thefundamentalfiltrationunitofthekidneysis_____

a) Ureter

b) Kidney

c) Nephron

d) Urethra

Answer:c)Nephron

25. Nametheenzymessecretedbypancreaticjuice.

Answer:Trypsin,whichdigestsproteins,andLipase,whichbreaksdownfats.

26. Namethefinalproductsformedbyproteins,carbohydrates,andfats.

Answer:

- Proteins:Aminoacids

- Carbohydrates:Glucose

- Fats:Glycerolandfattyacids

27. Whatispyruvate?

Answer:Theprocessofbreakingdownthesix-carbonmoleculeofglucoseinto two three-carbon molecules.

28. Whatarethedifferentprocessesofglucosebreakdown?

Answer: The different processes of glucose breakdownare:

1) Aerobicrespirationinthepresenceofoxygen

2) Anaerobicrespirationintheabsenceofoxygen

3) Respirationinlowoxygenconditions

29. Whatsubstancesarereleasedwhenglucoseisbrokendownintheabsence of oxygen?

Answer:Whenglucoseisbrokendownintheabsenceofoxygen,ethanol, carbon dioxide, and a small amount of energy are produced.

30. Whydoaquaticorganismshaveahigherrateofrespiration?

Answer: Aquatic organisms have a higher rate of respiration because the amountofoxygenavailableinwaterislow,sotheybreatherapidlytomeet their oxygen requirements.

31. Duringrespiration,thechestcavityexpandsandairisdrawnintothelungs. Which body parts are responsible for this effect?

Answer:Duringrespiration,theexpansionofthechestcavity,allowingairtobe drawn into the lungs, is caused by the ribs and the diaphragm.

32. Howiscarbondioxidetransportedinthebody?

Answer:Carbondioxidedissolvesinwaterandcombineswiththeblood, allowing it to be transported.

33. Howisoxygentransportedinthebody?

Answer:Oxygenistransportedbybindingtohemoglobinintheblood.

34. Birdsandmammalshavefourchambersintheirhearts.Whatisthe significance of this?

Answer: The body requires a high amount of energy to maintain its complex biologicalfunctions.Thisisonlypossiblewhenoxygen-richbloodandoxygen-poorbloodareseparated.Therefore,theyhavefourchambersintheirhearts.

35. Whatisdoublecirculation?

Answer:Theprocesswhereoxygen-richandoxygen-poorbloodpassthrough the heart twice, which is referred to as double circulation.

36. Whydoesaperson'sbloodpressuredecreasewheninjured?

Answer:Thebloodpressuredecreasesduetobloodlossfromtheinjury,which leads to a reduction in the heart's pumping capacity.

37. Name the types of blood vessels.

Answer:Arteries,veins,andcapillaries.

38. Howisanarterydifferentfromavein,andwhy?

Answer: Arteries have thick walls and are elastic to withstand high pressure frombloodpumpedbytheheart.Incontrast,veinshavethinnerwallsbecause they carry blood at lower pressure as it returns to the heart.

39. Howislymphformedinthebody?

Answer:Lymphisformedwhenplasma,proteins,andbloodcellspassthrough the walls of capillaries into the intercellular space of tissues.

40. Whatisthefunctionoflymph?

Answer:Lymphtransportsdigestedandabsorbedfatsfromtheintestineand returns excess fluid from tissues back into the bloodstream.

41. Howarewaterandmineralsabsorbedbyrootstransportedtotheleavesat the top of the plant?

Answer:Thestomataintheleavesreleaseexcesswaterthroughtranspiration, creatinganupwardpressurethathelpsinthemovementofwatertowardsthe leaves.

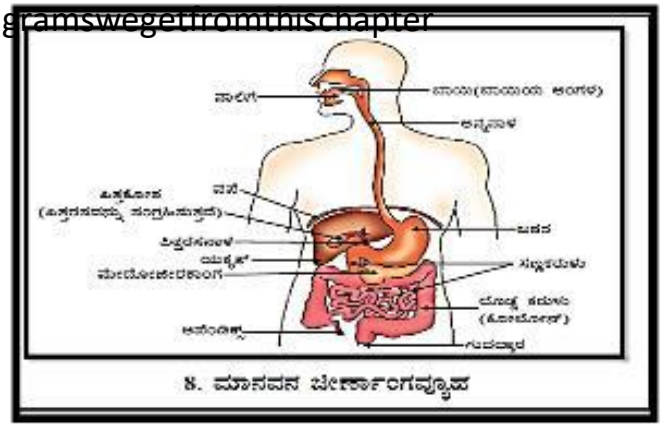
42. Whatisexcretion?

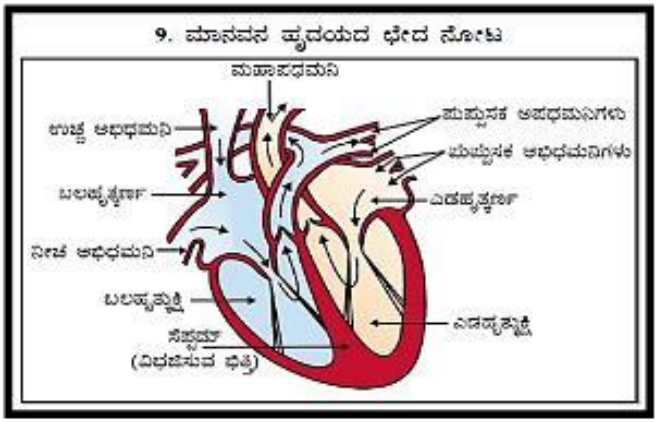
Answer:Excretionisthebiologicalprocessofremovingnitrogenouswaste products produced during metabolic activities from the body.

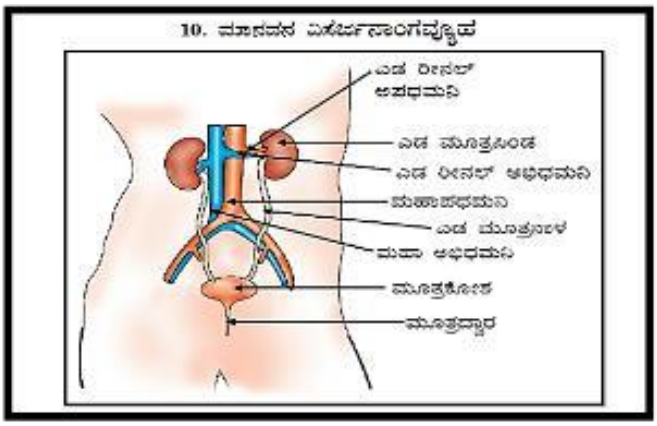
43. Howdoesexcretionoccurinplants?

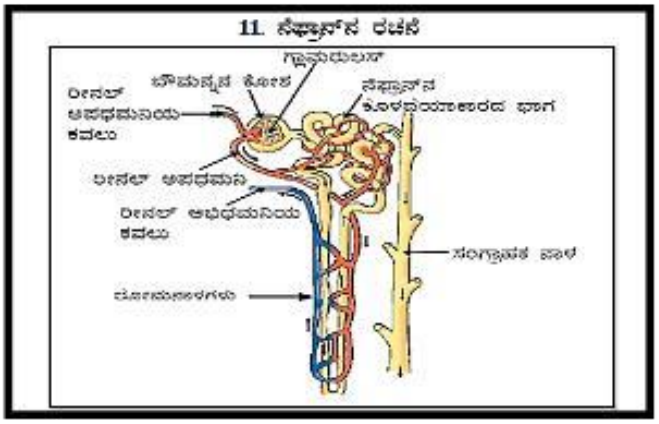
Answer:Plantsreleaseexcesswaterthroughtranspiration.Theystorewaste productsindeadcellsortissues,whicheventuallyfalloff.Additionally,some waste is excreted in the form of gums and resins.

Diagramswegetfromthischapter




## ControlandCoordination

1. Inanimals,controlandcoordinationareprovidedbythe_____and _____ systems.

a) Bone&muscle

b) Nerves&muscles

c) Bone&nerves

d) Blood&muscles

Answer:b)Nerves&muscles

2. The information sensed by sensory organs is stored in the _____partofthe neuron.

a) Dendrites

b) Axon

c) Nerveending

d) Cell body

Answer:a)Dendrites

3. The chemicals released at the axon cross the _____andreachthedendrites of another neuron.

a) Nerveending

b) Axon

c) Synapse

d) Cell body

Answer:c)Synapse

4. Reflexactionoccursinthe_____.

a) Brain

b) Spinalcord

c) Neuron

d) Cranial nerve

Answer:b)Spinalcord

5. Thepartofthebrainthatcontrolsactivitieslikeridingabicycleorwriting neatly with a pen is the _____.

a) Cerebrum

b) Cerebellum

c) Medulla

d) Pons

Answer:b)Cerebellum

6. Whenyouseeatamarind,yourmouthwaters.Thispartofthebrainis responsible for it:

a) Cerebrum

b) Cerebellum

c) Medulla

d) Pons

Answer:c)Medulla

7. Thebonystructurethatprotectsthespinalcordisthe:

a) Skull

b) Rib cage

c) Skeleton

d) Vertebralcolumn

Answer:d)Vertebralcolumn

8. Themovementofpollentowardstheovaryinplantsisdueto:

a) Phototropism

b) Geotropism

c) Hydrotropism

d) Chemotropism

Answer:d)Chemotropism

9. Thehormonethatinhibitsplantgrowthis:

a) Auxin

b) Cytokinin

c) Abscisicacid

d) Gibberellin

Answer:c)Abscisicacid

10. Thehormoneresponsibleforphototropisminplantsis:

a) Auxin

b) Cytokinin

c) Abscisicacid

d) Gibberellin

Answer:a)Auxin

11. Theinformationsensedbyreceptorsinthebodyistransmittedthrough:

a) Electricalimpulses

b) Blood

c) Lymph

d) Tubes

Answer:a)Electricalimpulses

12. Thehormonedeficiencythatcausesdiabetesis:

a) Adrenaline

b) Insulin

c) Glucagon

d) Thyroxine

Answer:b)Insulin

13. Thishormoneisknownasthe"emergencyhormone":

a) Adrenaline

b) Insulin

c) Glucagon

d) Thyroxine

Answer:a)Adrenaline

14. ThedeficiencyofthishormonecausestheGoiterdisease:

a) Adrenaline

b) Insulin

c) Glucagon

d) Thyroxine

Answer:d)Thyroxine

15. ThepresenceofthissubstanceinfoodkeepsusawayfromGoiterdisease:

a) Carbohydrate

b) Sodium

c) Iodine

d) Iron

Answer:c)Iodine

16. Theinjectiondoctorsgivetodiabeticsis:

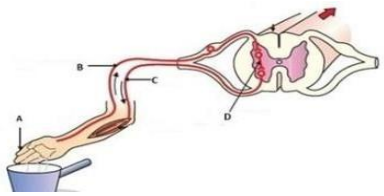
a) Insulin

b) TetanusToxoid(T.T.)

c) UUU

d) Estrogen

Answer:a)Insulin




17. Whatisareflexaction?

Answer:Areflexactionisanimmediate

response to a stimulus.

18. Whatisareflexarc?

Answer:Fromthetimeanactionoccursuntilaresponseisgiven,theneural pathway followed is called a reflex arc.

19. Howdomusclecellscreatemovement?

Answer:Musclecellschangetheirshapetocreatemovement.

20. Howdolivingcellschangetheirshape?

Answer: Muscle cells contain special proteins that respond to electrical impulsesfromnerves,alteringboththeshapeandstructureofthecells.

21. Explainthedifferencebetweenvoluntaryandinvoluntarymuscles.

Answer:

| Voluntary Muscles | Involuntary Muscles |
|---|---|
| Muscles that operate under our control | Musclesthatfunctionwithoutour consciouscontrol |
| Found in the arms and legs | Foundin the respiratory tract, oesophagus,andbloodvessels |

22. Whydoesthe"Touch-Me-Not"plantfolditsleaveswhentouched?

Answer:Theplant'scellschangetheirwatercontent,alteringtheirshape.This causes a reduction in the water supply to the leaves, leading to the folding of the plant's leaves.

23. Howisphototropismbeneficialtoplants?

Answer: Intwo types of movement, shoots respond by bendingtowardthe light,whilerootsbendawayfromthelight.Leavesneedsunlighttoproduce food, and roots are required to absorb water and minerals.

24. Nametheplanthormonesandexplaintheirfunctions.

Answer:Auxin,Cytokinin,Gibberellin,andAbscisicacidareplanthormones.

| Plant Hormone | Function |
|---|---|
| Auxin | Stimulatesgrowth |
| Cytokinin | Promotescelldivision |
| Gibberellin | Aidsinstemgrowth |
| AbscisicAcid | Inhibitsplantgrowth |

25. Whatis phototropism?

Answer:Itisthebehaviourofaplantbendingandgrowingtowardsthelight.

26. Whatisgeotropism?

Answer:Geotropismisthedownwardgrowthofplantrootsduetotheeffectof gravitation

27. Whatisthefunctionofreceptorsinthehumanbody?Nametheirtypes.

Answer:Receptorsperformthefunctionofperceivingvariousexternalstimuli. They are also called sensory organs. Their types are:

1) Olfactoryreceptorsinthenosedetectsmell.

2) Visualreceptorsintheeyesdetectsight.

3) Auditoryreceptorsintheearsdetectsound.

4) Gustatoryreceptorsonthetonguedetecttaste.

5) Touchreceptorsintheskindetecttouch.

28. Whathappensifreceptorsstopfunctioningproperly?

Answer:Receptorcellsarelocatedinsensoryorgans.Theyperceivechangesin the environment and trigger appropriate responses. If they stop functioning, actions and reactions do not occur. For example, when we touch something hot, we immediately pull our hand back to avoid injury. If this response fails, the hand may get burned.

29. Namethepartthathelpsintransmitnerveimpulsesinaneuron. The

part that helps transmit nerve impulses in a neuron:

a) Towardsthecell:Dendrite

b) Awayfromthecell:Axon

30. Brieflyrepresentthetransmissionofnerveimpulsesinthebodyusinga flow chart.

Answer:

Information→ Reaches the dendrites of the neuron →Electrical signals→

Cellbody→Axon→Axonterminal→Informationissharedatthesynapse →Finally,impulsesreachthetargetorganfromtheneuron,initiatinga response.

31. Astudent,duetoanaccident,isexperiencingthefollowingissues:

1) Unabletostandproperly.

2) Losttheabilitytosensesmell.

3) Unabletotastefood.

Indicatewhichpartofthebrainisaffectedineachcase. Answer:

1) Unabletostandproperly–Thecerebellumisaffected,causingalossofbody balance.

2) Losttheabilitytosensesmell –Thefrontallobe,whichisresponsibleforthe sense of smell, is affected.

3) Unabletotastefood–Thefrontallobe,whichisresponsibleforthesenseof taste, is affected

32. Explainthedifferencebetweennervoussystemcontrolandchemical control.

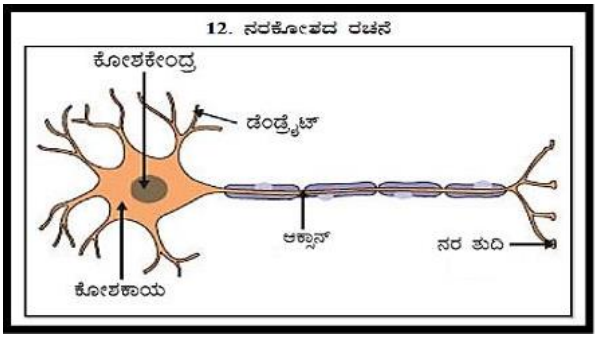
Answer:

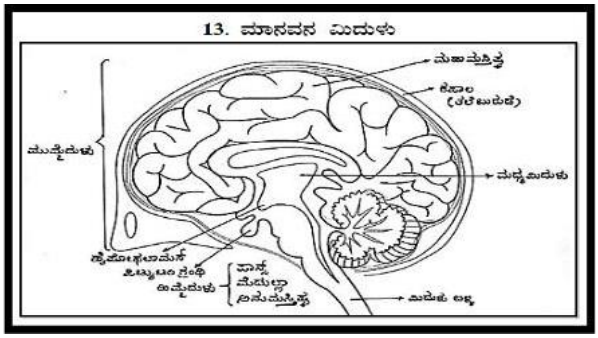
| Nervous System Control | Chemical Control |
|---|---|
| Control is achieved through specific organs such as nerves. | Therearenospecificorgans; controlisachievedthroughsecreted chemicals called hormones. |
| The information received by receptors reaches the target organ through | Informationreachesthetargetorgan throughhormones. |

33. Howdoesadrenalinehelpanathletepreparefor a race?

Answer: Adrenaline increases the heart rate,whichsupplies more oxygento themuscles,preventingthemfromtiringeasily.Itdilatesthebloodvesselsin thelegsandredirectsbloodfromthestomachtothemusclecellsinthelegs, enhancing performance.

Diagramsofthischapter




Chapter:Howdoorganismsreproduce?

1. Thechromosomesinthe nucleusofacellcontain_____molecules.

a) DNA

b) Chromatin

c) RNA

d) Centromere

Answer:a)DNA

2. Anexampleofreproductionbybinaryfissionis_____.

a) Leishmania

b) Spirogyra

c) Hydra

d) Planaria

Answer:a)Leishmania

3. Anexampleofreproductionbyregenerationis_____.

a) Leishmania

b) Spirogyra

c) Hydra

d) Planaria

Answer:d)Planaria

4. Anexampleofreproductionbybuddingis_____.

a) Leishmania

b) Spirogyra

c) Hydra

d) Planaria

Answer:c)Hydra

5. Anexampleofreproductionbyvegetativepropagationis_____.

a) Leishmania

b) Spirogyra

c) Sugarcane

d) Planaria

Answer:c)Sugarcane

6. Anexampleofreproductionthroughsporeformationis_____.

a) Leishmania

b) Spirogyra

c) Sugarcane

d) Rhizopus

Answer:d)Rhizopus

7. Thereproductivepartofa plantis_____.

a) Root

b) Stem

c) Flower

d) Leaf

Answer:c)Flower

8. Thepartoftheflowerthatproducespollenis_____.

a) Stigma

b) Petals

c) Anther

d) Style

Answer:c)Anther

9. Anexampleofreproductionbyfragmentationis_____.

a) Leishmania

b) Spirogyra

c) Sugarcane

d) Rhizopus

Answer:b)Spirogyra

10. Thecorrectreasonwhythetestesinmalesarelocatedoutsidethebodyis _____.

a) Tofacilitatethesmoothmovementofsperm

b) Sothatspermcanmovesmoothlyduetobody heat

c) Theproductionofspermrequiresatemperaturelowerthanbody temperature

d) Theproductionofspermrequiresatemperaturehigherthanbody temperature

Answer:c)Theproductionofspermrequiresatemperaturelowerthanbody temperature

11. Infemales,theovary produces_____eggseverymonth.

a) 10

b) 1

c) 20

d) 15

Answer:b) 1

12. Whenthefoetusisinthewomb,itreceivesnutrientsfromthemother through ----.

a) Amniotic fluid

b) Placenta

c) Umbilical cord

d) Bloodvessels

Answer:c)Umbilicalcord

13. Thevirusthatcausessexuallytransmitteddiseasesis_____

a) HIV

b) HPV

c) Syphilis

d) Gonorrhoea

Answer:a)HIV

14. Thehormonalcontraceptivemethodusedtopreventpregnancyis_____

a) Condom

b) Birthcontrolpills

c) Surgery

d) Copper-T

Answer:b)Birthcontrolpills

15. Whichofthefollowingisnotapartoffemalereproductioninhumans?

_____

a) Ovaries

b) Uterus

c) Vasdeferens

d) Fallopian tubes

Answer:c)Vasdeferens

16. The pollensacisassociatedwith_____

a) Petals

b) Ovules

c) Stigma

d) Pollengrains

Answer:d)Pollengrains

17. The partthatproducesspermis_____

a) Vasdeferens

b) Testis

c) Fallopian tube

d) Ovaries

Answer:b)Testis

18. Theorganismsthatcausecholeraandmalariareproducebythemethodof _____.

a) Binaryfission

b) Regeneration

c) Fragmentation

d) Budding

Answer:a)Binaryfission

19. WhatisthefunctionofDNA?

Answer:DNAisthesourceofinformationforsynthesizingproteins.Itis responsible for the inheritance of traits from parents to offspring.

20. Whatistheimportanceofdiversityinlivingorganisms?

Answer:Organismscangoextinctduetochangesintheenvironment.Ifthere is diversity among some organisms in a community, their chances of survival increase.

21. Explainthemethodsofreproductionwithanexampleforeach.

Answer: The methods of reproduction are:

- Binaryfission:Amoeba,Leishmania,Plasmodium
- Fragmentation:Spirogyra
- Regeneration:Hydra,Planaria
- Budding:Hydra
- Vegetativereproduction:Sugarcane,Rose,Cabbage,Banana,Bryophyllum
- Sporeformation: Rhizopus, Hyphae

22. Whatis zygote

Answer:Zygoteisthestagewhenthemaleandfemalegametesfuseandthe egg matures.

23. Namethepartsinvolvedinthereproductionofaplant'sflower.

Answer:Thepartsinvolvedinthereproductionofaplant'sflowerarethe anther and stigma.

24. Namethemaleandfemalereproductivepartsinaplant'sflower.

Answer:Themalereproductivepartinaplant'sfloweristheanther,andthe female reproductive part is the stigma.

25. Whatisself-pollination?

Answer:Self-pollinationoccurswhenthepollenfromafloweristransferredto the stigma of the same flower.

26. Whatiscross-pollination?

Answer:Cross-pollinationoccurswhenthepollenfromonefloweris transferred to the stigma of another flower.

27. Explainthedifferencebetweenself-pollinationandcross-pollination.

Answer:

- Self-pollination:Thisoccurswhenthepollenfromafloweristransferredto the stigma of the same flower.

- Cross-pollination:Thisoccurswhenthepollenfromonefloweristransferred to the stigma of another flower.

28. Howdoesthepollenreachtheovaryaftercontactingthestigma?

Answer:Afterthepollencontactsthestigma,itreachestheovarythroughthe style.

29. Howisanembryo formed?

Answer:Thezygoteundergoesseveraldivisionstoformtheembryo.

30. Howisaseedformed?

Answer:Thefertilizedovuledevelopsahardouterlayerarounditself,andthen it gradually grows into a seed.

31. Whatarethecommonchangesobservedinfemalesduringpuberty?

Answer: The voice becomes softer, the size of the breasts begins to increase, themenstrualcyclestarts,andhairgrowthisobservedaroundthearmpitsand genitalia.

32. Whatarethecommonchangesobservedinmalesduringpuberty?

Answer:Thevoicebreaks,facialhairbeginstogrow,andgrowthbecomesmore pronounced than in females. Hair growth is also seen around the armpits and genitalia.

33. Whatis puberty?

Answer:Pubertyistheperiodofadolescence,typicallybetweentheagesof13 to 19.

34. Whathormoneisresponsibleforphysicalchangesinmalesduringpuberty?

Answer:Thehormoneresponsibleforphysicalchangesinmalesduringpuberty is testosterone.

35. Whatglandsarefoundalongthepathofthevasdeferens?

Answer:Theglandsfoundalongthepathofthevasdeferensaretheprostate and seminal vesicles.

36. Whathappenstoanovumreleasedinfemalesifitisnotfertilized?

Answer:Iftheovumreleasedinfemalesisnotfertilized,itcansurviveforupto one day. During this time, the uterus prepares to receive the ovum through a spongystructure.However,iftheovumisnotfertilized,theliningoftheuterus gradually breaks down, leading to the release of blood and tissue through the vagina. This process occurs every month when an ovum is released, soit is called the menstrual cycle.

37. Whatisthepurposeofadvisingpurityuntilmarriage?

Answer: A woman must be physically and mentally capable of handling the important responsibility of pregnancy. Moreover, multiple partners in sexual relationshipscanleadtoseveralseriousdiseases,includingAIDS,gonorrhoea, and syphilis.

38. Whatarethemethodsavailabletopreventpregnancy?

Answer: There are various methods designed to prevent pregnancy, including theuseofcondoms,hormonalcontraceptivepillsthatalterhormonalbalance, and the insertion of devices like IUDs or Copper-T into the uterus. Pregnancy can also be prevented through surgical methods.

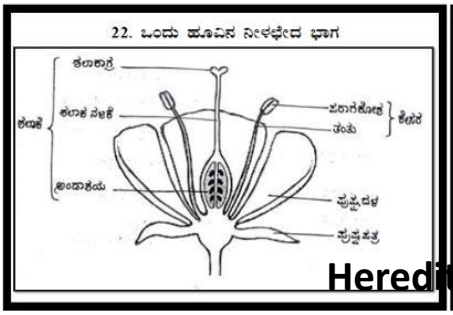
39. Howdoestheembryoreceivenourishmentinsidethemother'swomb?

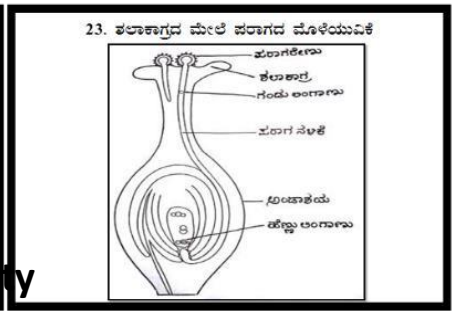
Answer:Theembryoreceivesnourishmentthroughtheplacentainthe mother's womb.

40. IfawomanisusingaCopper-T,doesithelpprotectherfromsexually transmitted diseases?

Answer: The Copper-T prevents sperm from reaching the egg, but it does not protectagainstdiseasestransmittedbybacteriaandviruses.Ifthesepathogens come into contact with bodily fluids, they can multiply and spread diseases.

"Imagesincludedinthischapter.




## Heredity

**1.** Individualswithacompletepairofsexchromosomesare_____.

a) Femaleonlyb)Male onlyc)Bothmaleandfemaled) Dependent on other factors

Answer:a)Femaleonly

2. OnwhichplantdidMendelconducthisstudyofthelawsof inheritance?

a) Roseb)Peaplantc)Tomatod)Potato

Answer: b) Pea plant

3. InmonohybridcrossesthePlantsMendelobtainedintheF1 generation were _____.

a) Alldwarfb) Alltallc)Sometallonlyd)Somedwarfonly

Answer: b) All tall

4. TheratioofplantsobtainedintheF2generationinadihybridcross is _____.

a) 9:3:1:3b) 9:3:3:1 c)1:3:3:9 d) 3:1

Answer:b)9:3:3:1

5. Thesexchromosomeinfemalesis_____.

a) XX b)XY c)YY d)XO

Answer:a)XX

6. Thesexchromosomeinmalesis_____.

a) XX b)XY c)YY d)XO

Answer:b)XY

7. Thesexchromosomethatdeterminesthebirthofamalechildis _____.

a) X b)Y c)XX d)YY

Answer:b)Y

8. Whatisgenetics?

Answer:Geneticsreferstothescientificstudyandresearchrelated to the reproduction of animals and plants.

9. Howisthesexofachilddeterminedinhumans?

In humans, there are sex chromosomes present, which are X in females and XY in males. In a fertilization context, either the X or Y chromosomefromthemalecombineswiththeXchromosomefrom thefemale.IfthecombinationisXY,a malechildisborn; ifitisXX,a female child is born. Thus, the sex of the child is determined.

10. Whatismonohybridcross?

Answer:Monohybridcrossreferstothegeneticcrossbetween parents that differ in only one trait.

11. Whatisadihybridcross?

Answer:Adihybridcrossreferstotheoffspringresultingfromthe crossing of plants that have two different traits.

12. Whyarethetraitsacquiredbyanorganismduringitslifetimenot hereditary?

Answer: The traits acquired by an organism during its lifetime do notcausechangesintheDNAofthe gametes,sothesetraitsarenot hereditary.

13. Createacheckerboardtoshowthephenotypicratioina monohybrid cross.

Answer:

InthisF1generation,allplantsexhibitthetalltrait. In

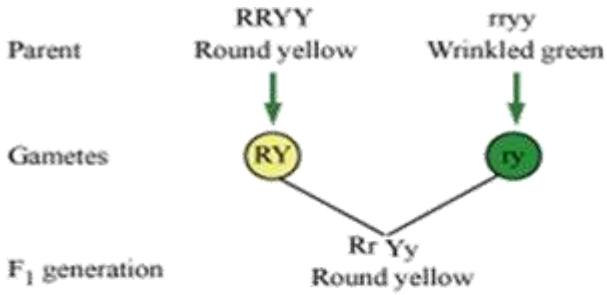
this F2 generation:

| | T | t |
|---|---|---|
| T | TT | Tt |
| T | Tt | tt |

(Note:ThelettersTandtrepresentthedominantandrecessive traits, respectively.)

14. Createacheckerboardtoshowthephenotypicratioinadihybrid cross.

Answer:




| | RY | rY | Ry | ry |
|---|---|---|---|---|
| RY | RRYY Round yellow | RrYY Round yellow | RRYy Round yellow | RrYy Round yellow |
| rY | RrYY Round yellow | rrYY Wrinkled yellow | RrYy Round yellow | rrYy Wrinkled yellow |
| Ry | RRYy Round yellow | RrYy Round yellow | RRyy Round green | Rryy Round green |
| ry | RrYy Round yellow | rrYy Wrinkled yellow | Rryy Round green | rryy Wrinkled green |

Thephenotypicratiois9:3:3:1.

15. If one trait has a frequency of 10% in an asexual reproduction groupandanothertraithasafrequencyof60%inthesamegroup, which trait could have arisen first?

Answer: The trait that is present in a higher percentage of the population(60%)islikelytohavearisenfirstandspreadthroughout the population, while the trait with 10% is newer and less widespread.

16. Howdoesthevariationamongspeciespromotetheirsurvival?

Answer:Reproductiveprocesses,especiallysexualreproduction,lead tonewvariationsthataresimilarbut subtlydifferent.Thus,different variations emerge within a species. Variations that are suited to the current environment survive through natural selection, while less

suited variations may disappear. As the environment changes, only thosevariationsthataresuitableforthenewconditionswillsurvive, ensuring the continuity of the species.

17. HowdoMendel'sexperimentsshowthattraitscanbedominant or recessive?

Answer:Afterself-fertilization,inthesecondgeneration,75%ofthe individuals exhibited the dominant trait, while 25% displayed the recessive trait.

18. HowdoMendel'sexperimentsshowthattraitsareinherited independently?

Answer:Mendelcrossedtwopairsofcontrastingtraitsinpeaplants. Thefirstgeneration (F1)showedonly thedominanttraitsfrom each pair. In the second generation (F2), the offspring displayed both parental traits as well as new trait combinations not present in the parents. This suggested that pairs of contrasting traits behave independentlyfromeachotherandareinheritedindependently.

19. A man with blood group A marries a woman with blood group O. TheirdaughterhasbloodgroupO.Doesthisinformationallowyouto determine whether the A or O trait is dominant? If yes, why? If not, why not?

Answer:

(i)IfAisconsidereddominantoverO,thefollowingcombinationsare possible:

Man:A/OandWoman:O/O

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Man:A/OandWoman:O/O

| | A | O |
|---|---|---|
| O | AO | OO |
| O | AO | OO |

SincethedaughterhasbloodgroupO,itindicatesthatthemanhas the genotype A/O, meaning O is recessive to A.

| | A | A |
|---|---|---|
| O | OA | OA |
| O | OA | OA |
| O | OA | OA |
| A | AA | AA |

Thus,itisnotpossibletodeterminewhichbloodgroupisdominant based on the information provided in the question.

20. Whatarethevariouswaysinwhichorganismswithspecifictraits increase in a population?

Answer: When a change occurs in a population, and that change contributes to the better survival of organisms in existing natural conditions,thetraitisthennaturallyselected.Consequently,more organisms possessing that trait survive in the population.

21. Whyarethetraitsacquiredbyanorganismduringitslifetimenot heritable?

Answer:Thetraitsacquiredduringanorganism'slifetimearechanges in the somatic cells and are not capable of being passed on to the nextgeneration.OnlychangesthatoccurintheDNAofgermcells can be heritable.

22. Whyisthesurvivalofasmallnumberoftigersaconcernfroma conservation perspective?

Answer:Tigershaveverylittlevariationintheirgenetictraits,andif natural conditions change drastically, any tiger may struggle to survive. For example, if a deadly disease infects tigers, the lack of genetic diversity in the population means that all tigers could potentiallydie.Thedeclineinthetigerpopulationsuggeststhatthe existing variations may not be suited to the changing environment and could soon face extinction.

23. Isgeographicseparationasignificantfactorintheclassificationof plantspeciesthatundergoself-pollination?Ifyes,why,andifno,why not?

Answer: No, since the population is self-pollinating, it is less influencedbyfactorsresultingfromgeographicseparation.In contrast,geographicseparationisasignificantfactorincross-pollinated species because it leads to rapid accumulation of differencesbetweentwogeographicallyseparatedorganisms.

24. Isgeographicseparationasignificantfactorintheclassificationof asexual reproducing organisms? If yes, why, and if no, why not?

Answer:Anyorganismthatreproducesasexuallydoesnothave significantvariationsamongitsgenerations.Anychangescausedby geographic separation cannot be passed on to future generations becausethesevariationsinDNAarenotsufficienttocreatenew species.

26.Whycanallhumanbeings,despitehavingdifferentsizes,colors, and shapes, be said to belong to the same species?

Answer:Althoughtheremaybeslightdifferencesinthegenetic makeup of individuals from different ethnic groups, there is no reproductiveisolation.Reproductiveisolationseparatesonespecies fromanother.Humanswhodifferinsize,color,andappearancecan interbreed and produce viable offspring.

Chapter:OurEnvironment

1.A goodAquarium isdescribedas_____

a)Biomeb)Ecosystemc)Communityd)Biosphere

Answer: b) Ecosystem

2. Thepercentageofenergyreleasedintotheenvironmentinthe form of biological activity and heat by primary consumers is _____.

a) 60%b)70%c)80%d)90%

Answer:d)90%

3. Theozonelayerisessentialbecauseitabsorbs_____

a) Ultravioletradiationb)Heatc)Solarradiationd)Infrared radiation

Answer:a)ultravioletradiation

4. Wastethatisnotsubjectedtobiologicaldegradationiscalled _____

a) Organicwasteb)Manurec)Plasticd)Kitchenwaste

Answer: c) Plastic

5. Thefactorresponsibleforthedestructionoftheozonelayeris _____

a) Nitricacidb)CFCc)Carbond)Oxygen

Answer: b) CFC

6. Theradiationthatsplitsoxygenmoleculesintheatmosphereinto atoms is _____

a) Betaradiationb)Gammaradiationc)Alpharadiationd) Ultraviolet radiation

Answer:d)Ultravioletradiation

7. Inthesequenceofgrass→grasshopper→frog→snake→eagle, the producers are _____

a) Grassb)Grasshopperc)Frogd)Snake

Answer: a) Grass

8. Ifgrassprovides5000kJofenergyinthefoodchainofgrass→ deer→tiger,theamountofenergythetigercanobtainis_____.

a) 5000 J b)500 J c)50J d)50,000 J

Answer:c)50J

9. Thechemicalsubstanceusedinfireextinguishersis_____.

a) Nitrogenb)Oxygenc)Carbondioxided)Hydrogen

Answer: c) Carbon dioxide

10. Thegasproducedfromtheincompletecombustionoffossilfuels is ____ .

a) Carbondioxideb)Carbonmonoxidec)Nitrogend)Hydrogen

Answer: b) Carbon monoxide

11. Theamountofenergythatherbivoresreceivewhenthey consume green plants is _____.

a) 40%b)10%c)20%d)90%

Answer:b)10%

12. Theprimaryconsumerinfoodchainsis_____.

a) Tigerb)Crocodilec)Liond)Frog

Answer: b) Crocodile.

13. Thecomponentthatblocksultravioletradiationfromthesunis _____

a) Plantsb)Cloudsc)Ozoned)Sea

Answer: c) Ozone

14. Thediseaseseeninhumansduetothedepletionofozoneinthe atmosphere is _____.

a) Diabetesb)Tuberculosisc)Cholerad)Skincancer

Answer: d) Skin cancer

15. Whenaharmfultoxinistransferredfromonetrophiclevelto another through food, it increases. This is called _____.

a) Pesticideb)Poisoningc)Biologicalmagnificationd)Toxic accumulation

Answer:c)Biologicalmagnification.

16. Givetwoexamplesofhuman-madeecosystems_____

Answer:Gardensandpondsareexamplesofhuman-made ecosystems.

17. Nametwodecomposersinourecosystem.

Answer: Bacteria and fungi.

18. Whyaregreenplantscalledproducers?

Answer:Becauseproducershavetheabilitytocapturesolarenergy through photosynthesis.

19. Nametheacid-formingoxidesthatcauseacidrain.

Answer: Sulfur oxides and nitrogen oxides.

20. Whydoenzymesthatbreakdowncarbohydratesnotbreakdown rocks?

Answer: The enzymes produced in the body perform specific functions.Therearenoenzymesinourbodythatcanbreakdownor decompose rocks, so it is not possible to decompose them.

21. Whatisthereasonforanyfoodchainnothavingmorethanfour trophic levels?

Answer:Sinceonly10%ofenergyistransferredfromonetrophic level to the next, it becomes very limited as it moves from level to level, making it insufficient for more than four trophic levels.

**Diagrams to be Practiced for the 2024-25 Academic Year for Class 10 Students.**

| SL No. | Chapter | Figure No | Figure Name |
|---|---|---|---|
| 1. | Chemical Reactions and Equations | 1.6 | • Electrolysis of Water |
| 2. | Acids, Bases and Salts | 2.1 | • Reaction of Zinc Granules with dilute Sulphuric Acid and Testing Hydrogen Gas by Burning |
| 3. | Metals and Non-metals | 3.3<br>3.12 | • Action of steam on a Metal<br>• Electrolytic refining of Copper |
| 4. | Life Processes | 5.3<br>5.10<br>5.14 | • a) Opened Stomata b) Closed Stomata<br>• Sectional view of Human Heart<br>• Structure of Nephron |
| 5. | Control and Coordination | 6.3 | • The Human Brain |
| 6. | How do organisms reproduce | 7.8 | • Germination of pollen on stigma |
| 7. | Light – Reflection and Refraction | 9.7 | • Ray Diagrams of Images Formed by a Concave Mirror (a, b, c, d, e, and f) |

| | | | |
|---|---|---|---|
| | | 9.16 | • Nature, Position, and Size of Images Formed by a Convex Lens at Different Positions of Objects (a, b, c, d, e, and f) |
| 9. | The Human Eye and the Colourful World | 10.6 | • Recombination of the Spectrum White Light |
| 10. | Electricity | 11.1<br><br>11.1 Table<br><br>11.6<br><br>11.7 | • Simple Electric Circuit<br><br>• Symbols commonly used in electrical circuits.<br><br>• Resistors in series mode<br><br>• Resistors in parallel |
| 11. | Magnetic Effects of Electric Current | 12.6 (a) | • A pattern of concentric circles indicating the field lines of a magnetic field around a straight conduction wire. |