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EXAM EMPOWERER

Daily 10 questions and diagrams

1. Differentiate between chemical combination and chemical decompositions

chemical combination	chemical decomposition
Two or more reactants combine to form a single product.	Single reactant breaks down to give two or more simpler products.
$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + Heat$	$CaCO_3(s) \xrightarrow{Heat} CaO(s) + CO_2(g)$

2. Differentiate between endothermic and exothermic reaction.

Exothermic reaction	Endothermic
Reaction in which heat is released along with the products.	Reaction in which energy is absorbed
$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + Heat$	$CaCO_3(s) \xrightarrow{Heat} CaO(s) + CO_2(g)$

3. Differentiate between displacement and double displacement reactions.

Displacement reaction	Double displacement reaction
more reactive element displaces less reactive element from its compound. Ex, $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$	Reactions in which there is an exchange of ions between the reactants Ex ,$BaCl_2 + Na_2SO_4 \rightarrow 2NaCl + BaSO_4$

4. Differentiate between oxidation and reduction.

Oxidation	Reduction
1. Gain of oxygen 2. loss of hydrogen	1.Loss of oxygen 2.gain of hydrogen
Ex, $2Cu + O_2 \rightarrow 2CuO$	$CuO + H_2 \rightarrow Cu+H_2O$

5. What are Redox reactions ?

Ans: If one reactant gets oxidized while the other gets reduced during a reaction.

6. Why is respiration/decomposition of vegitable/combustion - are considered as exothermic reactions.

Ans: Heat energy is released in the process.

7. Mention three types of decomposition reactions with an eample for each.

Ans: **Thermal decomposition** : decomposition reaction carried out by heating

Ex ; $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$ (CaO- Calcium oxide is called lime or quick lime. It is used in the manufacture of cement.)

Photochemical decomposition reaction :

Silver chloride and Silver bromide decomposes when exposed to sunlight.

$$2AgCl(s) \xrightarrow{Sunlight} 2Ag(s) + Cl_2(g)$$

Electrical decomposition : Decomposition of water into Oxygen and Hydrogen upon electrolysis.

$2H_2O \rightarrow 2H_2 + O_2$

8. Define precipitation reaction.

Ans : Reaction that produces a precipitate

9.Define Corrosion.Give eample.

Ans: The process in which a metal is attacked by substances around it such as air, moisture, acids, etc. Ex, Rusting of iron(reddish brown powder), Black coating on silver (silver sulphide), green coating on copper(Copper carbonate[formed when copper reacts with moist CO_2])

10. Define rancidity. State two measures to prevent

Ans: Change in the smell and taste of food materials containing oils and fats due to oxidation. Preventive measures :1. Keeping food in air tight containers. 2.Adding antioxidants. 3.Flushing bags of chips with nitrogen.

+ Diagrams- Human digestive system + Electrolysis of water.

11. Name the brown fumes liberated when lead nitrate is heated. Write the balanced chemical equation for this reaction.

Ans:Nitrogen dioxide. $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2$

12. What is neutralization reaction?

Ans: The reaction between an acid and a base to give a salt and water.

13. Why should curd and sour substances not be kept in brass and copper vessels?

Ans: Acids present in them reacts with the metal to liberate hydrogen gas and harmful substances, there by spoiling the food.

14. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

Ans: The process of dissolving an acid or a base in water is a highly exothermic. 1. the heat generated may cause the mixture to splash out and cause burns. 2.The glass container may also break due to excess heat produced.

15. Why does dry HCl gas not change the colour of the dry litmus paper?

Ans: Acid dissociates in to ions only in the aqueous solution.

16. Plaster of Paris should be stored in a moisture-proof container. why?

Ans: Plaster of Paris absorbs moisture to form a hard solid known as gypsum.

17. Write chemical name, formula and uses of washing soda.

Ans: Sodium carbonate- **Na_2CO_3.** It is used in (i) glass, (ii)soap, (iii) paper industries. (iv) remove permanent hardness of water.

18. Write chemical name, formula and uses of baking soda.

Ans: Sodium hydrogen carbonate- **$NaHCO_3$**. It is used (i) as an antacid.(ii) in soda-acid fire extinguishers. (iii)manufacture of baking powder.

19. What is chloro-alkali process?

Ans: Electrolytic decomposition of sodium chloride solution

20. Name the products of chloro-alkali process and write two uses of each.

Ans: Hydrogen(Gas)(Cathode)- Ammonia, fuel, margarine.
Chlorine(Gas)(Anode)- purification of water, manufacture of PVC, CFC, insecticide.
Sodium hydroide(Alkali)- Degreasing metals, Soaps, Detergents, paper, artificial fibre.

+ Diagrams- Electric motor + conductivity of salt solution.

21. **What is meant by water of crystallization? Give eample.**

Ans: Fixed no of water molecules present in one formula unit of a salt.Ex-$CuSO_4.5H_2O$

22. What is the difference between strong acid and concentrated acid?

Ans: Acid which dissociates in to ions completely is called strong acid where as the concentrated acid is the one which has less water content.

23. How plaster of Paris is manufactured ?Explain with chemical reaction.

Ans: Plaster of Paris is obtained by heating gypsum ($CaSO_4.2H_2O$) to 373 K temperature.

$CaSO_4.2H_2O \xrightarrow{heat} CaSO_4.½\ H_2O + 1½\ H_2O$

24. Why do acids not show acidic behavior in the absence of water?

Ans: the dissociation of hydrogen ions from an acid occurs only in the presence of water.

25. Write chemical name, formula and uses of bleaching powder.

Ans: Calcium oxy chloride- $CaOCl_2$- disinfect water, to bleach clothes in laundry, oxidising agent in industries, bleach the wood pulp, bleaching agent for cotton.

26. What is meant by acid rain? How it is harmful to aquatic organisms?

Ans: When the pH of rain water in less than 5.6 we call it as acid rain.It destroys eggs of the aquatic organisms .

27. Write chemical name, formula and uses of plaster of paris.

Ans: Calcium sulphate hemihydrate**(**$CaSO_4.½\ H_2O$)

Uses- Plaster for supporting fractured bones, making smooth surfaces, making toys.

28. Sodium, potassium and lithium are stored under oil.

Ans: They are highly reactive metals and reacts with air and water very rapidly.

29. What are alloys?

Ans: Homogeneous mixture of two or more metals, or a metal and a nonmetal.

30. Food cans are coated with tin and not with zinc. Why?

Ans: Zinc is more reactive than tin.

+ Diagram- Reaction of zinc with sulphuric acid + conductivity of acidic solution

31. distinguishing between metals and non-metals on the basis of their physical properties

Metals	**Non -metals**
1. malleable	1. non-malleable(britle)
2. good conductors a of electricity	2. poor or non conductors of electricity.
3. sonorous	3. non-sonorous

33. Differentiate between metal and non-metal on the basis of their chemical properties.

Metals	**Non-metals**
1. electron donors, i.e. they are electropositive	1. electron acceptors i.e they are electronegative
2. react with oxygen to form basic oxides	2. react with oxygen to form acidic oxides.
3. are reducing agents	3. are oxidizing agents.

34. What are amphoteric oxides? Give two examples of amphoteric oxides.

Ans: Metal oxides which react with both acids as well as bases to produce salts and water.

Ex: aluminium oxide (Al_2O_3), zinc oxide (ZnO).

35. State ways to prevent the rusting of iron.

Ans: Oiling, greasing, painting, galvanization(applying thin coating of zinc),chromium plating, anodisation.

36. Name:- (i) Metal which is liquid at room temperature.- Mercury **(ii)Metal that can be easily cut with a knife.-** Sodium **(iii)Metal which is the best conductor of electricity-** Silver **.(iv) Shiny non metal-**Iodine **(v) Smooth alkali metals-**Sodium, Potassium, Lithium

37. Define thermit reaction?Write uses of it.

Ans: The displacement reaction of aluminium with iron(III) oxide(Fe_2O_3) which is highly exothermic.Use- Joining railway tracks, and broken machinery parts.

38. Why hydrogen gas is not evolved when a metal reacts with nitric acid ?

Ans: HNO_3 (nitric acid) is a strong oxidising agent. It oxidises the H_2 produced to water.

39. Differentiate between calcinations and roasting.

Calcination	**Roasting**
heating carbonate ores at high temperature in the presence of excess air.	heating sulphide ores at high temperature in the limited supply of air.
CO_2 is produced	SO_2 is produced

40. Define amlgum.

Ans: : An alloy which consists mercury as one constituent.

+ Diagram – Human heart, + Electrolytic refining ofcopper.

41. **Write the four properties of ionic compounds.**

Ans: 1. solids and are some what hard. 2.have high melting and boiling points.(strong attractive force between ions) 3. generally soluble in water. 4.conduct electricity only in the molten state.(movement of ions)

42. Define Covalent bond.

Ans : A chemical bond formed by the mutual sharing of one or more electron pairs.

43.List the properties of covalent compounds.

Ans: (i) have low melting points and boiling points. (ii) generally gaseous or liquids or soft solids. (iii) are generally insoluble in water, but soluble in organic solvents like alcohol, acetone. (iv) They are bad conductors of electricity.

44. Why is the conversion of ethanol to ethanoic acid an oxidation reaction?

Ans: Oxidation of ethanol in to Ethanoic acid involves addition of oxygen and removal of hydrogen.

44. **What is a homologous series? Give example.**

Ans. A group of members of the same class of organic compounds, where successive members differ by a $-CH_2$ group.

Ex : a)$CH_3OH, C_2H_5OH, C_3H_7OH, C_4H_9OH$ b) $CH_4, C_2H_6, C_3H_8, C_4H_{10}$

45. **Differentiate between ethanol and ethanoic acid.**

Ethanol	**Ethanoic acid**
Has pleasant odour	Has pungent odour
On cooling does not freeze	On cooling freezes at 290K
Does not reacts with base.	Reacts with bases such as NaOH, KOH
gets dehydrated to ethane by conc. Sulphuric acid	Does not get dehydrated by conc. Sulphuric acid.

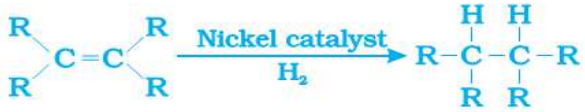
46. Write the uses of Ethanol and Ethanoic acid.

Uses of Ethanol:1. used in medicines such as tincture iodine, cough syrups and many tonics(as it's a good solvent). 2.used as a fuel along-with petrol. 3. used as an antiseptic to sterilize wounds and syringes in hospitals.

Uses of Ethanoic acid:1.dilute solution of ethanoic acid (vinegar) is used as a preservative in pickles and ketchup. 2. for making esters, which are used in perfumes and as flavouring agents.

47.What is hydrogenation? What is its industrial application?

Ans : The process of converting unsaturated hydrocarbons in to saturated hydrocarbons by passing hydrogen in the presence of palladium or nickel catalyst.



This reaction is used in the hydrogenation of vegetables oils.

48. **Explain the mechanism of the cleaning action of soaps.**

Cleansing Action of Soaps : A molecule of soap is made up of two parts:

(i) an ionic part which is hydrophilic (water loving) and

(ii) a hydrocarbon chain which is hydrophobic (water hating).

Most dirt is oily in nature and the hydrophobic end of soap attaches to dirt, while the ionic end attracted by the water. This result in the formation of micelles. Soap molecule forms an emulsion. The cloth needs to be mechanically agitated to remove the dirt particles from the cloth.

49. **What are isomers? Draw the structures of two isomers of butane (C_4H_{10}).**

Ans. Organic compounds having the same molecular formula but different structural formulae, and hence, different physical and chemical properties are called isomers.

n – butane and *iso*–butane

50. What is catenation?

Ans;The ability of carbon to form covalent bonds with other carbon atoms.

+ diagram – Action of steam on metal ,+ Biogas plant

51.Write the electron dot structures of a)methane b)ethane c)ethene.

Ans: See page no 4,6 & 7 of science textbook part -II

52. What is esterification? Write the uses of esters.

Ans: A chemical reaction between ethanoic acid and ethanol gives sweet smelling ester .

Uses- Flavouring and tasting agent

53.What is substitution reaction?

Ans: A chemical reaction in which hydrogen atoms in a saturated hydrocarbon are replaced by chlorine atoms one by one.

53. What were the limitations of Dobereiner's classification?

Ans: i. He could identify only three triads from the elements known at that time.

ii. All known elements could not be classified into triads.

54.What were the limitations of Newland's law of octaves?

Ans: (i) It was applicable up to calcium only. (ii) Elements that were discovered after did not find a place. (iii) In order to fit elements into his Table, he put some unlike elements under the same note.

55.What were the criteria used by Mendeleev in creating his Periodic table?

Ans: Mendeleev arranged the elements in the increasing order of their atomic masses.

Gave much importance in the arrangement for the properties of the elements.

56.Why do you think the noble gases are placed in separate group?

Ans: i.Noble gases are inert elements. ii.They are having octet electronic configuration.

57.How does the electronic configuration of an atom relate to its position in the Modern Periodic Table?

Ans: The numbers of valence electrons determine the group of the element and the number of shells determine period of the element in the modern periodic table.

Example: Mg (atomic no-12)- Electronic configuration-2,8,2. It has K, L & M shells so, it belongs to 3^{rd} period. Valency of Mg is 2 so, it belongs to 2^{nd} group.

58.Define Atomic radii.How it varies across the period and down the group?

Ans: The distance between the centre nuclei and the outermost electron shell of the atom. Atomic radii decreases across the period and increases down the group.

59.State the merits of Mendeleev's classification of elements.

Ans: 1) He left blank spaces for the elements yet be discovered. And also predicted their possible ores.

2) When noble gases were discovered, they could be placed in a new group without disturbing the existing order.

60.Why is diffusion insufficient to meet the oxygen requirements of multi-cellular organisms?

Ans: All the cells of multicellular organisms are not in direct contact with the outside environment.

+ Diagram- Series and parallel connections of resistors.

61.What are the differences between autotrophic nutrition and heterotrophic nutrition?

Autotrophic nutrition	Heterotrophic nutrition
(i) Food is synthesised from simple inorganic raw materials such as CO_2 and water.	(i) Food is obtained directly or indirectly from autotrophs.
(ii) Presence of green pigment (chlorophyll) is necessary.	(ii) No pigment is required
(iii) Digestion is not required	(iii) Digestion is required

62.What is the role of the acid in our stomach?

Ans: i) creats acidic medium which facilitates the action of the enzyme pepsin.

ii) Kills microbes entering the stomach along with food.

63.What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration?

Ans: The content of oxygen in air is high as compared to the amount of dissolved oxygen present in water.(Aquatic organisms have to breath faster to get adequate oxygen)

64.What are the different ways in which glucose is oxidized to provide energy in various organisms?

Ans: i)In yeast cell glucose is breakdown in the absence of oxygen to form ethyl alcohol and carbon dioxide along with energy.

Glucose → pyruvate – Absence of Oxygen → Ethanol(2 carbon compound) + CO_2 +Energy

ii)In muscles of humans, in the deficiency of oxygen. Glucose is converted into lactic acid

Glucose → pyruvate ---*Cell --lack of oxygen* → Lactic acid(3 carbon compound) +Energy

iii)In the cells of higher organisms, in mitochondria, presence of oxygen glucose is converting into CO_2 and H_2O. In this process large amount of energy is liberated.

Glucose → pyruvate – *Cell-- presence of oxygen*→ $6CO_2 + 6H_2O$ +Energy

65.Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

Ans: i.) Helps to maintains body temperature. ii)ensures efficient supply of oxygen to the body.

66.How are water and minerals transported in plants?

Ans: In xylem tissue, vessels and tracheids of the roots, stems and leaves are interconnected to form a continuous system of water-conducting channels reaching all parts of the plant. At the roots, cells in contact with the soil actively take up ions. This creates a difference in the concentration of these ions between the root and the soil. Water, therefore, moves into the root from the soil to eliminate this difference. Evaporation of water molecules from the cells of a leaf creates a suction which pulls water from the xylem cells of roots.

67.How is food transported in plants?

Ans: Transport of soluble products of photosynthesis is called **translocation**. Phloem transports food materials from the leaves to different parts of the plant body. The transportation of food in phloem is achieved by utilizing energy from ATP. The translocation of food and other substances takes place in the sieve tubes with the help of adjacent companion cells both in upward and downward directions.

68.What are the methods used by plants to get rid of excretory products?

Ans: (i) Plants get rid of excess of water by transpiration.

(ii)Waste products are stored in cellular vacuoles.

(iii)Waste products may be stored in leaves that fall off.

(iv)Resins and gums are stored in old xylem.

(v) some waste substances excreted into the soil from roots.

69.What is the role of saliva in the digestion of food?

Ans: Salivary amylase in the saliva breaks down starch into sugar.

70.What are the differences between aerobic and anaerobic respiration?

Ans:

Aerobic respiration	Anaerobic respiration
1. Occurs in the presence of O_2.	1. Occurs in the absence of O_2.
2. Takes place in mitochondria.	2. It occurs only in cytoplasm.
4. The products are CO_2 and H_2O	4. The products are ethyle alcohol and carbon dioxide.
5. It yields more energy.	5. It yields less energy.

+Diagrams –Human ecretory system + Structure of nephron

71.What is double circulation? What are its importances?

Ans: Blood goes through the heart twice during each cycle. **Importance-**

(i) keeps the oxygenated blood separated from de-oxygenated blood.

(ii) allows more efficient supply of oxygen to the body cells.

72.What are the differences between the transport of materials in xylem and phloem?

Transport of materials in xylem	Transport of materials in phloem
(i) it helps in the transport of water and minerals. (ii) Water is transported upwards from roots to all other plant parts. (iii) Transport in xylem occurs with the help of simple physical forces such as transpiration pull.	(i) it helps in the transport of food. (ii)Food is transported in both upward and downward directions (iii)Transport of food in phloem requires energy in the form of ATP.

73.What is 'translocation' in plants?

Ans: Transport of soluble products of photosynthesis.

74.Define transpiration.

Ans; Loss of water in the form of vapour from the aerial parts of the plant.

75.**How do guard cells regulate opening and closing of stomatal pores?**

Ans; When the water enters in to the guard cells they swell causing the stomatal pore to open. When the water moves out the guard cells shrink and stomatal pore closes.

76.List three events that occur during the process of photosynthesis.

Ans: (i) Absorption of light energy by chlorophyll.

(ii) Conversion of light energy to chemical energy (iii) splitting of water molecules into hydrogen and oxygen. (iii) Reduction of carbon dioxide to carbohydrates.

77.Di**fferenciate between an artery and a vein.**

Artery	Vein
Carries blood away from the heart	Carries the blood to the heart
Thick walled	Thin walled
Valves are absent	Valves are present

78.Why does herbivores have longer small intestine than carnivores ?

Ans: Herbivores eating grass need a longer small intestine to allow the cellulose to be digested. Meat is easier to digest, hence carnivores like tigers have a shorter small intestine.

79.Name different secretions of digestive system in humans and write their functions .

No	Part of digestive system	Secretion	function
1	Mouth	Salivary amylase	Converts starch into sugar
2	Stomach	HCl	Kills micro organisms & Creates acidic medium
		Mucous	Protects the lining of the stomach from the action of HCl
		Pepsin	Protein digestion
3	Liver	Bile juice	Makes the food alkaline & breaking down the large fat molecules in to smaller globules.(emulsification)
4	Pancrease	Trypsin	Protein digestion
		Lipase	Breaking down the emulsified fat
5	Small intestine	Intestinal juises	➢ Protein → amino acids ➢ Carbohydrates → glucose ➢ Fats → fatty acids and glycerol

80.How does our body respond when adrenaline is secreted into the blood?

Ans: It speeds up the heartbeat and hence supplies more oxygen to the muscles. The breathing rate also increases due to contractions of diaphragm and rib muscles**.**

+ Diagram-Structure of neuron + Human brain

81.How are involuntary actions and reflex actions different from each other?

Involuntary actions	Reflex actions
i. cannot be consciously controlled.	i. are sudden, unconscious automatic response to some change in an environment.
ii. directly under the control of the brain.	ii. controlled by spinal cord.
iii.Takes place slowly.	iii.Takes place very rapidly

82.Name different type of trophisms exhibited by the plants and write their meaning.

Ans: A tropism is a growth toward or away from a stimulus.

Phototropism - the directional growth of an organism in response to light(controlled by auxin)

Thigmotropism - plant growth in response to touch or contact with a solid object.

Geotropism - growth in response to gravity.

Hydrotropism - directional growth in response to water.

chemotropism - growth in response to chemicals.

83.Write the functions of, a) Forebrain b)Cerebellum c) Mid brain d)Medulla

Ans: a) Forebrain :- 1.Control the voluntary actions.

2. Stores information collected from sense organs **(Memory)**

3.Receives sensory impulses from various body parts and integrates it.

4.Sensation of hunger.

b)Cerebellum: - 1.Controls posture and balance 2.Control precision of voluntary actions

c) Mid brain : Controls involuntary activities.-

d)Medulla : Controls involuntary actions eg. blood pressure, salivation, vomiting

84.List the important plant hormones and write their functions.

plant hormones	Functions
Auxin	helps the cells to grow longer
Gibberellin	help in the growth of the stem
Cytokinins	promote cell division
Abscisic acid	inhibits growth. (Ex-wilting of leaves)

85.List the important Endocrine glands, the hormone they secrete & their function

Gland	Hormone	Function
Pituitary Gland	Growth hormone	-Controls growth- (dwarfism & gigantism.)
Thyroid Gland	Thyroxin	regulates carbohydrate, protein and fat metabolism(Goitre- Iodised salt)
Adrenal Gland	Adrenaline	-Increase heart beat,blood pressure, breathing rate,to face the situation.
Pancreas	Insulin	-regulates the blood sugar level.(Diabetes)
Testis	Testosterone	changes associated with puberty in males
Ovary	Oestrogen	changes associated with puberty in females

86.What is reflex action? Which part of brain is responsible for this?

Ans: Sudden action in response to something in the environment.-Spinal cord.

87. H**ow does binary fission differ from multiple fission?**

Binary Fission	Multiple Fission
(i) Formation of two daughter cells from the mother cell. (ii)Undertaken under optimal conditions. Ex: Amoeba, Leishmania.	(i) Formation of many daughter cells from the mother cell. (ii) Undertaken under adverse conditions. Ex: Plasmodium

88.What are the advantages of vegetative propagation ?

Ans: (i) Good qualities of a variety can be maintained indefinitely. (ii) gives genetically uniform population. (iii) quicker method of raising of crops. (iv) Plants raised bear flowers and fruits earlier.

89.How is the process of pollination different from fertilisation?

Pollination	Fertilisation
transfer of pollen grains from anther to the stigma of a flower	fusion of male gamete with the female gamete

90. What is the role of seminal vesicle and the prostate gland?

Ans: Secretion of Seminal vesicle and the prostate gland : i)Makes the transport of the sperms easier, ii)Provides nutrition to the sperms

+ Diagrams- Simple circuit + circuit diagram to study Ohms law

91. What are the changes seen in girls at the time of puberty?

Ans: (i) Skin becomes oily. Pimples often develop.

(ii) Breast size begins to increase, with darkening of the skin of the nipples at the tips of the breasts. (iii) Beginning of menstruation cycle.

(iv) Growth of thick hairs in armpit and genital area between the thighs.

92.What are the advantages of sexual reproduction over asexual reproduction?

Ans: (i) The offspring's produced exhibit more diversity.

(ii) It plays a prominent role in the origin of new species.

93. What are the functions performed by the testis in human beings?

Ans: (i) Production of sperms. (ii) Secretion of testosterone hormone which induces secondary sexual characters at puberty.

94.What happens if egg is not fertilized in female?

Ans: The lining of the uterus breaks down along with blood vessels. The degenerated part of uterus along with the blood moves out of the vagina in the form of bleeding, called menstruation.

95. What are the different methods of contraception?

Ans: (i) **Creation of mechanical Barrier :** Condoms on the penis or similar coverings worn in the Vagina.Using loop or the copper-T inside vegina.

(ii) **Changing the hormonal balance** -by using drugs or pills.

(iii) **Surgical methods :** Blocking the vas deferens in male or the fallopian tube in female.

96.Why do testes located in scrotum outside the abdominal cavity?

Ans. Sperm formation requires lower temperature than the body temperature.

97. Differentiate between plumule and radicle

Plumule	Radicle
i)Plumule is future shoot. ii)It grow towards the sun	i)Radicle is future root. ii)It grows towards the soil.

98. What is placenta? Write two functions of placenta.

Ans: Embryo attaches to the mother's blood with the help of a special tissue called placenta. Functions i) It provides nutrients to the embryo.

ii) Helps to remove the waste generated by the embryo.

99. Differentiate between self pollination and cross pollination.

self pollination	cross pollination
i)transfer of pollen grains within the same flower ii)Does not require external agency	i)transfer of pollen grains from one flower to another. ii)Requires external agency.

100. Why are traits acquired during the life-time of an individual not inherited?

Ans: Acquired traits cannot be passed on to DNA of germ cells.

+ Diagrams – Parts of flower+ germination of pollen grains

101.How is the sex of the child determined in human beings?

Ans : Females have 44 + two X chromosomes and the males have 44+ one X and one Y chromosome. Therefore, the females are44+ XX and the males are 44+XY. Male gametes(sperms) have either22+ X or 22+Y chromosome. Female gametes(eggs) can only have 22+X chromosome. A child who inherits an X chromosome from her father will be a girl(44+XX), and one who inherits a Y chromosome from him will be a boy(44+XY)

102. What is speciation ? What factors could lead to the speciation?

Ans : Formation of new and distinct species in the course of evolution from the existing species.The factors that could lead to the rise of a new species are :-

1.Natural selection, 2. Genetic drift, 3.Geographical isolation

103. What are fossils?

Answer : Fossils are the Remains and relics of dead organisms of the past.

104. Differentiate between acquired traits and inherited traits.

Sl.No	Acquired traits	Inherited traits
1	developed during the lifetime of an individual.	Characteristics transmitted from parent to offspring's.
2	Cannot be passed on to progeny	Can be passed on to progeny
3	Doesn't bring change in DNA of germ cells.	Bring changes in DNA of germ cells.
	Ex, Dancing ability in man	Skin color in man

105. Differentiate between homologous organs and analogous organs.

homologous organs	**analogous organs**
Organs that have same basic structural plan and origin but different functions.	Organs that have different origin and structural plan but same function.
Ex:hands of humans and the wings of birds	wings of bird and insects

106.**Define Principal Focus of concave mirror .**

Ans: The rays of light parallel to the principal axis of a mirror after reflection meet at a point on the principal axis and this point is called the principal focus of concave mirror.

107. **Define Principal Focus of convex mirror .**

Ans: The rays of light parallel to the principal axis of a mirror after reflection appear to come from a point on the principal axis and this point is called the principal focus of convex mirror.

108.Define Focal Length of the spherical mirror. How its related with radius of curvature?

Ans: Distance between the pole and the principal focus of a spherical mirror. $f = \frac{R}{2}$

109. Define Snell's law.

Ans: For any two given pair of media, the ratio of the sine of the angle of incidence to the sine of the angle of refraction is a constant.

110. Define absolute Refractive index .

Ans: The ratio of the velocity of light in a vacuum to its velocity in a specified medium.

+ diagrams- 10.7(a to f) ray diagrams of images formed by concave mirror.

111.Define Principal Focus of concave lens .

Ans: Parallel rays of light pass through the concave lens the refracted rays appear to come from one point called the principal focus of concave lens.

112.Define Principal Focus of convex lens

Ans:Parallel rays of light pass through convex lens the refracted rays converge at one point called the principal focus of convex lens.

113. **Why do we prefer a convex mirror as a rear-view mirror in vehicles?**

Ans :1. It always gives virtual, erect, and diminished image of the objects placed in front of it.

2.Gives a wider field of view.

114. **Define 1 dioptre(D) of power of a lens.**

Ans: 1 dioptre is defined as the power of a lens of focal length 1 metre.[$D = \frac{1}{f}$]

115.Give differences between real and virtual images.

Real Image	Virtual Image
can be taken on a screen.	cannot be taken on a screen.
always inverted:	always erect.

116.List the uses of concave mirrors.

Ans: 1.in torches, 2.In Search lights, 3.In vehicle headlights,(To get parallel beam of light) 4.In shaving mirrors, 5.used by the dentist, (To get enlarged, virtual image- **object should be placed between F and O**) 6. In solar furnace(To concentrate sunlight to produce heat)

117.Write the mirror and lens formula.

Mirror formula- $\frac{1}{v}+\frac{1}{u}=\frac{1}{f}$ and lens formula- $\frac{1}{v}-\frac{1}{u}=\frac{1}{f}$

118.Write the magnification formula for mirror and lens.

for mirror: **(m) =** $\frac{h'}{h}=-\frac{v}{u}$, for lens: **(m)** $\frac{h'}{h}=\frac{v}{u}$

119.Write the function of a)Iris, b)pupil, c)lens d) retina – in human eye

Ans: **Iris: C**ontrols the size of the pupil .

Pupil: Regulates and controls the amount of light entering the eye.

Lens: Forms an inverted real image of the object.

Retina: membrane having light-sensitive cells where image formation takes place.

120. What is myopia or near-sightedness?How it can be corrected?

Ans: Can see near objects clearly but cannot see distant objects clearly. Corrected by using concave lens.

+ Diagrams-Images formed by convex lens(10.16)

121. What is hypermetropiais or far-sightedness? How it can be corrected?

Can see distant objects clearly cannot see the nearby objects clearly .Corrected by convex lens.

122.What is presbyopia? How it can be corrected?

Ans: person may suffer from both myopia and hypermetropia. corrected by a bi-focal lens.

123.What is the power of accommodation of eye?

Ans: The ability of the human eye lens to adjust its focal length to view both distant and nearby objects clearly

124.What is dispersion of light?Name the colour which bends a)least, b)bends most.

Ans: Splitting up of white light in to its constituent colours.(Reason- Different colours of light bend through different angles) a)Red, b)Violet

125Name the phenomenon's caused by atmospheric refraction of light.

Ans: Twinkling of stars, advanced sunrise, delayed sunset, formation of rainbow, change in the apparent position of stars.

126.Define Tyndall effect ?

Ans: The phenomenon of scattering of light by the colloidal particles.

127.What is the far point and near point of the human eye with normal vision?

Ans: The near point of the eye is 25cm and the far point of the normal human eye is infinity.

128.Why do stars twinkle?

Ans: Stars emit their own light and they twinkle due to the **atmospheric refraction of starlight**.

129..Explain why the planets do not twinkle?

Ans: Planets are much closer to the earth, and are thus seen as extended sources. If we consider a planet as a collection of a large number of point-sized sources of light, the total variation in the amount of light entering our eye from all the individual point-sized sources will average out to zero, thereby nullifying the twinkling effect.

130.Why does the Sun appear reddish early in the morning?

Ans: During sunrise, the light rays coming from the Sun have to travel a greater distance in the earth's atmosphere before reaching our eyes. The shorter wavelength of light is scattered out and only longer wavelength light(Red) reach our eyes.

+Diagrams-Myopia (11.2- 3 diagrams) -+hypermetropia (11.3- 3 diagrams)

131.What is the colour of the sky outside earths atmosphere? Why?

Ans: Black, -because there is no atmosphere so there will not be scattering of light.

132.Why is the colour of the clear sky blue?

Ans: When sunlight passes through the atmosphere, the fine particles in air scatter the blue colour which is having shorter wavelength more strongly.

133.Define the unit of current.

Ans : Ampere (A)[ammeter-connected in series]. 1 A is defined as the flow of 1 C of charge through a wire in 1 s.

134.Define resistance. On what factors does the resistance of a conductor depend?

Ans: the property of a conductor to resist the flow of charges through it

(a) Length of the conductor (b) Cross-sectional area of the conductor

(c) Material of the conductor (d) Temperature of the conductor

135.What are the advantages of connecting electrical devices in parallel?

Ans: 1. the total resistance decreases.

2.When one component fails in the circuit other components are not effected.

136.State Ohm's law.

Ans: At constant temperature, 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, provided its temperature remains the same.

137.State Joules law of heating.

Ans : Joule's law of heating $H = I^2 Rt$

Heat produced in a resistor is (i) directly proportional to the square of current for a given resistance, (ii) directly proportional to resistance for a given current, and (iii) directly proportional to the time for which the current flows through the resistor.

138.Name the devises working based on Joule's heating –

Ans: Electric laundry iron, electric toaster, electric oven, electric kettle and electric heater, electric bulb, electric fuse(made up of alloy with high resistance and low melting point)

139.What is electric power? Mention any three formulae to calculate electric power.

Ans: Rate of consumption of electric energy is electric power. [SI unit is watt (W)]

$P = VI$ or $P = I^2R$ or $P = \frac{V2}{R}$

140. **Why are coils of electric toasters and electric irons made of an alloy?**

Ans : i.Alloys have higher resistivity, and ii.have high melting point.

+Diagrams- table 12.1, symbols of components used in electric circuit. + Electric generator.

141. Define magnetic field. State the characteristics of Field Lines

Ans: The area around a magnetic in which its magnetic force can be experienced.

(i) Field lines arise from North pole and end into South pole of the magnet.

(ii) Field lines never intersect each other.

(iii)Field lines are closer in stronger magnetic field.

(iv) Field lines are closed curves.

142.What is a solenoid?

Ans: Coil of many circular turns of insulated copper wire wrapped closely in cylindrical form.

143.Define electromagnetic induction.

Ans; The process by which a changing magnetic field in a conductor induces a current in another conductor.

144. What is the advantage of alternate current.

Ans: It can be transmitted over long distance without much loss of energy.

145. Name two safety measures commonly used in electric circuits and appliances.

Ans: i.Use of earth wire and proper earthing. ii.Use of fuse

146. What precaution should be taken to avoid the overloading of domestic electric circuits?
Ans: i.Too many appliances should not be connected to a single socket.
ii.Too many appliances should not be used at the same time.
iii.Fuse should be connected in the circuit.

147. Differentiate between dynamo and motor

Dynamo	Motor
Converts mechanical energy into electrical energy	Converts electrical energy into mechanical energy.
Principle: Electromagnetic induction	Magnetic effect of electric current

148.List the characteristics of a good fuel:
Ans: i)High calorific value, ii)Less smoke, iii)Easy availability
(iv) less expensive, v)Easy to store and transport, vi) Less polluting
149.What is the major component of bio gas. What are the advantages of using bio gas.
Ans: Methane is the major component of bio gas.
i)Its renewable source of energy, ii)causes less pollution,
150.List the disadvantages of a)Nuclear energy, b)wind energy, :
Ans: a)(i) Risk of nuclear waste leakage, (ii) High cost of setting up of nuclear plant
(iii) Pollution of environment .
b) i)min wind speed of 15km/sec required, ii)setting up wind mills is very expensive.
+Diagrams- Images formed by concave mirrors(10.17) + Recombination of spectrum of white light

151.What are the disadvantages of fossil fuels?
Ans: i) Are non renewable sources of energy, ii) Cause pollution,
152. Give any two methods for waste disposal?
Ans. (i) By recycling and minimising the use of non-biodegradable wastes.
(ii) By producing useful products like biogas, compost, vermin compost, etc. from the biodegradable wastes.
153. What is biomagnification or biological magnification? Which organism is affected more by this ?
Ans: The concentration of pollutants or toxic chemicals increases in successive trophic levels in a food chain is called biological magnification.The organisms which are on the higher trophic level are affected more.
154. Write the cause for depletion of ozone layer . Write its effect and measure to save it.
Ans. Delpetion of ozone layer is caused by CFC (chloro floro carbon) Effects :- Cancer in human beings, Loss of immunity in humans,Destruction of aquatic life and vegetation.
Step taken to limit the damage to the ozone layer :- reducing the use of CFCs

155. Distinguish between biodegradable and non-biodegradable substances.

Biodegradable substances	Non-biodegradable substances
1.Decomposed by micro organisms	1. Not decomposed by micro organisms.
2.Do not cause bio magnification	2. Cause bio magnification.
Ex: Kitchen wastes,paper,sewage.	Ex:Plastic, metal cans, glass, polymers

156.List eco-friendly habits
Ans: i) Using paper bags instead of plastic bags, ii)Using public transportation system, iii)planting the trees, iv)proper disposal of waste products.

157. List the 5R's with example.

Ans: Refuse: products that can harm the environment, Ex: plastic carry bags.

Reduce: Use the natural resources less. Ex: electricity, water and fossil fuels

Reuse: Using the things again and again. Ex, The plastic bottles, envelopes,paper

Repurpose: using things for some other useful purpose. For example, cracked crockery, or cups with broken handles can be used to grow small plants and as feeding vessels for birds.

Recycle: Used Plastic, paper, glass and metal items

158. What is rain water harvesting? Harvested rain water stored underground(Khadins) has many advantages-Give reasons.

Ans: Collecting, storing and using rain water. Advantages-

i)The water stored underground does not evaporate.

ii)provides moisture for vegetation over a wide area.

iii) enriches the water table and recharges ground water sources.

iv) Protected from contamination by human and animal wastes.

v)does not promote breeding grounds for mosquitoes and pests.

159. List the problems caused by the construction of large dams.

Ans. (i) **Social problems :** rehabitation of people .

(ii) **Economic problems :** spending of huge amount of public money ansd less benefits.

(iii) **Environmental problems:** deforestation and the loss of biological diversity production of greenhouse gas by submerged biomass.

160. Suggest some approaches towards the conservation of forests.

Ans. (i) Afforestation and reforestation.

(ii) Checking the forest fire and cutting of trees.

(iii) developing social forests.

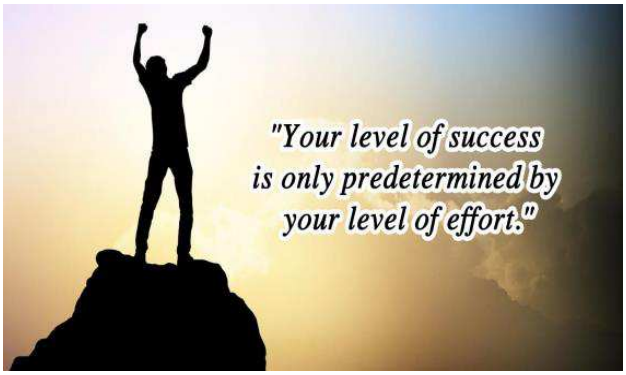
(v) Building of national parks, sanctuaries and biosphere reserves.

+ diagram-Magnetic field lines around straight conducting wire.

I hope my honest effort to serve the children who want to score good marks but facing some difficulties in doing so. 16 days, 160 questions answered shortly but accurately + 30 diagrams really empowered the students to face the upcoming exams with more confidence. I am really very glad to all those who used and shared my work with needy people. Your words of appreciation are the motivating source of energy behind my works.

All the best.

Keep working hard.



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-Yours : **Raghavendra Bhat.**