

**10 STD SCIENCE**

**2 MARKS**

**SO FOR ASKED GOVERNMENT QUESTIONS**

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**IMPORTANT 2 MARKS**

**1. Mendel has observed Tallness as a dominant character in the garden pea plant. Similarly, tongue rolling is a dominant character in man. In a group of 60 students, 45 can roll their tongue and 15 are non rollers. In the above context, calculate the percentage of dominant and recessive characters.**

The percentage of dominant character =  $\frac{45 \times 100}{60} = 75\%$

The percentage of recessive character =  $\frac{15 \times 100}{60} = 25\%$

Ratio between them is  $75 : 25 = 3 : 1$

**2. The inheritable characters vary in different species and within the same species. Name the variation in the following cases.**

i) The eye colour among the human beings are varied as blue, black, brown, green, etc.,  
This is called as ----- variation.

ii) The dentition in rabbit and elephant are not the same. This is called as ----- variation.

**Ans:** i) Intra specific ii) Inter generic

**3. Here are certain important hereditary jargons. Fill in the blanks by choosing a suitable one from the list given.**

( Genes Allele speciation Allelomorphs)

i) ----- are the factors which form the physical basis of inheritance.

ii) ----- is the alternate forms of the same gene.

iii) ----- are the expressions of contrasting pair of alleles.

**Ans:** i) Genes ii) Allele iii) Allelomorphs

**4. Sequentially arrange the different species of man from primitive to modern man.**

(Neanderthal man, Homo habilis, Homo erectus, Homo sapiens)

**Ans:** Homo heppilis----- Homo erectus---- Neanderthal man -----Homo sapiens

**5. What are variations? Mention their types.**

Variation is defined as the differences in the characteristics among the individuals of the same species (intra specific variation) or among the different genera (inter generic variation) or different species (Inter specific Variation).

**Types of variation:**

**a. Somatic Variation b. Germinal Variation:**

**6. Match the following by identifying the pair : (medicines, fuel, microbes, metabolism, organic acids)**

**i) vaccine ii) natural gas iii) citric acid iv) monoclonal antibodies v) vitamins**

Vaccine	Microbes
Natural gas	Fuel
Citric acid	Organic acids
Monoclonal antibodies	Medicines
Vitamins	Metabolism

**7. Marasmus and Kwashiorkar are both protein deficiency defects. Marasmus differs from Kwashiorkar in enlarged belly and swelling in the face. Are these symptoms for the above diseases correct? If not, correct it.**

**Ans:** Symptoms of Marasmus disease are not correct.

**Symptoms of Marasmus:**

The child loses weight and suffers severe diarrhoea and it will appear as though bones are covered by the skin.

**Symptoms of Kwashiorkar:** The child develops an enlarged belly with swelling in the face and feet.

**8. A list of disorders are given below. Pick out the odd one out and give reasons.**

(Thalassemia, haemophilia, night blindness, albinism, sickle cell anaemia)

**Ans:** Odd one : night blindness

Reason: Night blindness is a vitamin deficiency disease (Vitamin-A). The remaining diseases are hereditary diseases.

**9. What are the symptoms of common cold?**

i) ----- ii) -----

**Ans:** i) Flow of mucous, water ii) Headache, slight rise in temperature

**10. Name the tests done for the diagnosis and confirmation of AIDS.**

Enzyme Linked Immuno Sorbent Assay (ELISA): Diagnosis test

Western Blot : confirmatory test.

**11. Match B and C with A**

<b>A</b>	<b>B</b>	<b>C</b>
<b>Vitamins</b>	<b>Deficiency diseases</b>	<b>Symptoms</b>
Vitamin A	Nyctalopia	Night Blindness
Vitamin B	Scurvy	Nervous disorder
Vitamin C	Rickets	Bleeding gums
Vitamin D	Haemorrhage	Defective calcification of bones
Vitamin K	Beri-beri	Profuse loss of blood

**12. Pick out the odd ones:**

i) AIDS : Retro virus, lymphocytes, **BCG**, ELISA

ii) Bacterial disease : **Rabies**, cholera, **common cold**, influenza.

iii) DPT vaccine : Diphtheria, **tuberculosis**, pertusis, tetanus

iv) Infective stage of Plasmodium in humans: Sporozoites, **merozoites**, trophozoites, gametocytes.

v) Mental dimension : **brightness of skin**, normal metabolism, no black rings around eyes, knows his capacity.

**13. Name two diseases that are transmitted by houseflies. Mention their causative pathogens.**

1 Amoebic dysentery Entamoeba histolytica

2 Typhoid Salmonella Typhi

**14. The important event of meiosis is the crossing over. It occurs during -----.**

i) Leptotene ii) **Pachytene** iii) Diplotene iv) Zygotene

**15. Pick out the item which has sequential arrangement.**

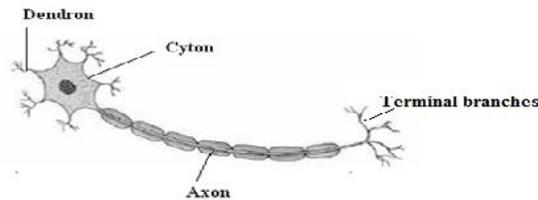
- i) zygotene Leptotene Pachytene Diplotene Diakinesis  
 ii) Diakinesis zygotene Leptotene Pachytene Diplotene  
 iii) **Leptotene zygotene Pachytene Diplotene Diakinesis**

**16. What is corpora quadrigemina? Name the functions associated with it.**

1. The dorsal portion of the midbrain consists of four hemispherical bodies is called corpora quadrigemina.
2. It controls and regulates various visual reflexes and optical orientation.

**17. Copy the diagram and label any two parts in the group given:**

(cyton, axon, dendron, terminal)



branches)

**18. The diagram is of the human brain.**

Shade the areas marked A and B in the parts of the brain, corresponding with the function.

A. Seat of smell B. Seat of vision



**19. Correct the statements, if they are wrong.**

- i) Alpha cells produce insulin and beta cells produce glucagon.
- ii) Cortisone suppresses the immune response.
- iii) Thymus gland is a lymphoid mass.
- iv) Ovary produces eggs and androgen

**Ans:** i) alpha cells produce glucagon and beta cells produce insulin

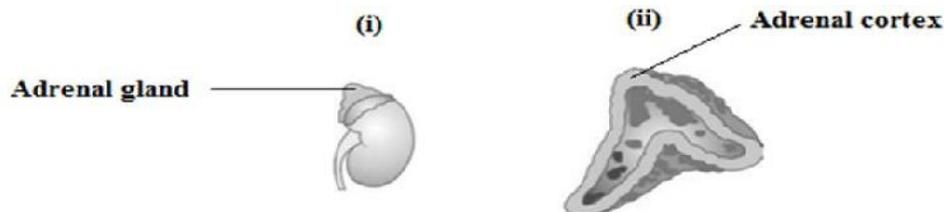
iv) Ovary produces eggs and Oestrogen.

(Statements ii & iii are correct)

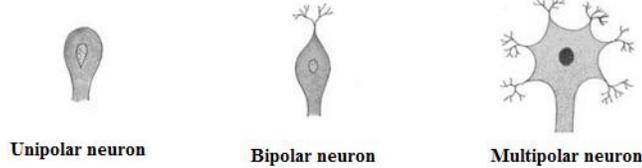
**20. Copy the diagram and label the parts with the help of the clues given:**

i) It is otherwise called supra renal gland.

ii) It secretes two hormones, namely aldosterone and cortisone.



21. Copy and identify the types of neurons given below:



22. Name the agents of pollination in the following cases:

- i) Bright coloured flowers with scent and nectar glands.
- ii) No colour / scent/ nectar but pollen grains are dry, light weight and powdery. Stigma is feathery.

**Ans:** i) Agents of pollination: Insects like butterflies and honey bees      Example: Clitoria, Jasmine  
 ii) Agent of pollination: Wind      Example: Grass, pine, maize

23 . a. Identify Fig. A and B.



b. Which part of A is modified into B

- a) A = Gynoecium (Female reproductive part of the flower)
- B = Simple fleshy Fruit (Drupe)
- b) Ovary is modified into fruit

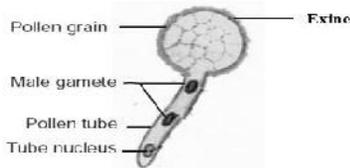
24. The methods of reproduction and the organisms are given below. Match the type of reproduction with the suitable organism.

Fission	Spirogyra	Yeast
Budding	Protozoans	Flatworms
Fragmentation	Bryophyllum	Bacteria

**Ans:**

Fission      Protozoans      Bacteria  
 Budding      Bryophyllum      Yeast  
 Fragmentation      Spirogyra      Flatworms

25. Draw the given diagram and label the following parts: i) Exine ii) Tube nucleus.



26. **Assertion (A)** : Mammalian heart is called myogenic heart.

**Reason (R)** : Heartbeat is regulated by a specialized muscle bundle (pacemaker) in mammals.

i) **Both A and R are true and R explains A**

27. One of the following groups contains a non-mammalian animal. Pick up the group.

- i) dolphin, walrus, porcupine, rabbit, bat
- ii) elephant, pig, horse, donkey, monkey
- iii) antelope, deer, cow, buffalo, black buck
- iv) **dog, cat, crocodile, lion, tiger**

28. The epidermis of mammals contains-----

- i) **hair, bristles, quills**
- ii) hair, nails, claws
- iii) hair, bristles, horns
- iv) hair, nails, scales

29. Based on relationship, fill in: Whale: Flippers. Bat : -----

Ans: Wings

30. Fill in the blank. RBC: Carrier of oxygen, WBC: -----

Ans: produces antibodies to resist the germs entering the body

31. Based on modifications, make the pairs:

incisor: tusks of elephant, ----- : quills of porcupine

Ans: Hairs

32. Mention any four adaptations seen in the camel so that it can live successfully in deserts.

1. Doubly thick skin to conserve water, as they live in deserts.
2. The skin contains water-storing osmotic cells to conserve water, as they live in deserts.
3. Thick bushy eyebrows covering the eyes to protect their eyes from sand storms.
4. Their nostrils can be closed during desert storms .

33. Name the three important blood proteins seen in plasma. Add a note on their functions.

No	Blood proteins	Functions
1	Globulin	For Immunity
2	Fibrinogen	For blood clotting
3	Albumin	For water balance

34. Which blood cells are without nuclei? What is the advantage of this condition?

1. Matured Red blood cells (RBC) are without nuclei.
2. **Advantage** :The space occupied by the nucleus is taken by the haemoglobin molecules. To carry oxygen

35. Name the protein and the blood-cells responsible for the clotting of blood.

1. The protein responsible for the clotting of blood :**Fibrinogen**
2. The blood cells responsible for the clotting of blood: **Blood Platelets–Thrombocytes**

36. FILL UPS

i) In frogs, all the teeth in the upper jaw look alike, whereas in human beings they are different. The Type of dentition in man can be called ----- a) Homodont b) Isodont c) Heterodont d) Acrodont

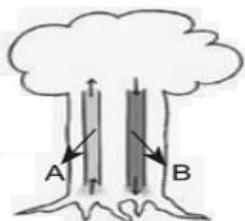
ii) The dental formula of a mammal is written as ICPM =2023/1023. The teeth missing in it are -----.  
a) incisors b) canines c) premolars d) molars

Ans: i) Heterodont ii) b) Canines

37. The Master chemists of our body are the kidneys. Justify.

Ans: ii) Kidneys maintain the chemical composition of blood.

38. Name the types of vascular tissues in the plant stem which are labelled A and B.



- i) Name A and B
- ii) What materials are transported through A?
- iii) What materials are transported through B?
- iv) How do the materials in A move upwards to the leaves?

**Ans:**

- i) **A** = Xylem **B** = Phloem
- ii) Xylem transports water minerals.
- iii) Phloem transports food and amino acids.
- iv) root pressure and transpiration.

**39. Match the methods of nutrition of special organs with suitable examples**

Autotrophs	Mycorrhiza	Cuscutta
Parasites	Chlorophyll	Monotropa
Saprophytes	Haustoria	Hibiscus

**Ans:**

Autotrophs	Chlorophyll	Hibiscus
Parasites	Haustoria	Cuscutta
Saprophytes	Mycorrhiza	Monotropa

**40. Observe the diagram**



- i) Mention the type of movements shown in figure A and B
- ii) How does this movement differ from the movement of mimosa?

**Ans:** i) A = Geotropism B = Phototropism

ii) **Movement of A and B**

**Movement of Mimosa**

Movement is dependent on growth

Movement is independent on growth

**41. Sugar is converted into alcohol. In the above reaction what kind of process takes place? Which micro-organism is involved?**

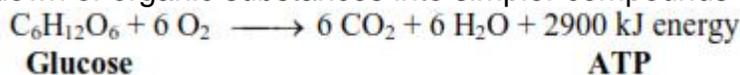
1. fermentation.
2. yeast.

**42. In human beings, air enters into the body through ----- and moves into -----In fishes, water enters into the body through ----- and the dissolved oxygen diffuses into-----**

1. Nostrils
2. Lungs
3. Mouth
4. Blood

**43. What is respiration? Give a balanced equation for aerobic respiration.**

The process of acquiring oxygen through breathing and making it available to cells for the process of the breaking down of organic substances into simpler compounds is called respiration.



**44. Fill in the blanks**

i) Animals give out ----- through respiration. ii) In the presence of sunlight, plants prepare ----

**Ans:** i) Carbon dioxide ii) carbohydrate (food)

**45. Fill in the blanks with suitable answers from those given in the brackets.**

(harmful, heavy metals, carbon dioxide, sulphur particles)

Generation of waste products which contain Mercury, Uranium, Thorium, Arsenic, and other ----- are - -----to human health and environment. ----- present in the coal will cause acid rain and the

release of ----- a green house gas, causes climate change and global warming.

**Heavy metals**

**harmful**

**Sulphur**

**bondioxide**

**46. Depict a food chain by placing the following organisms in the correct trophic levels:**

(snake, grass, eagle, frog, grasshopper)

**Ans:** Grass → Grasshopper → Frog → Snake → Eagle  
 (Producer) (Primary consumer) (Primary carnivores) (Secondary carnivores) (Tertiary carnivores)

**47. Show an aquatic food chain using the following organisms.**

(Small fish, Phytoplanktons, Kingfisher, Zooplanktons)

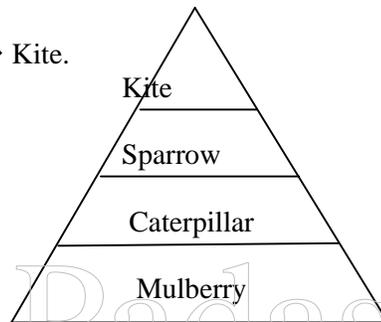
**Ans:** Phytoplanktons → Zooplanktons → Small fish → Kingfisher  
 (Producer) (Primary consumer) (Secondary consumer) (Tertiary consumer)

**48. Study the food chain below, correct it and convert it into a pyramid of energy.**

**MulberrySparrow caterpillarKite**

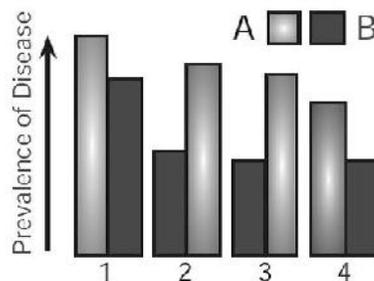
**ns:**

Mulberry → Caterpillar → Sparrow → Kite.



**49. The bar-graph indicates the prevalence / widespread attack of infectious diseases in two cities A and B. Observe it and answer the questions given below:**

1. Dengue fever 2. Rat fever 3. Cholera 4. Chikungunya

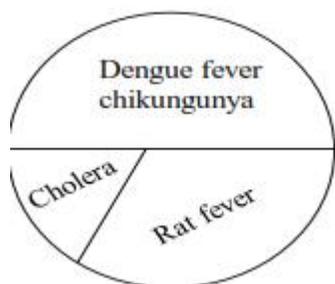


a. What may be the reason for the disease in city A? - 1. Poor hygiene 2. Stagnant water

b. Which city needs more effective system of waste-disposal and cleaning? - City „A“ needs more effective system of waste-disposal and cleaning

c. How can the disease be controlled in city A? - Providing adequate sanitation and hygiene facilities

**50. The pie diagram represents a survey result of infectious diseases in a village during 2008 – 2009. Analyse it and answer the following:**



- i) Which diseases affect the majority of the population? - **Dengue fever and chikungunya**
- ii) How are these diseases transmitted? - **transmitted through the vector-mosquito**
- iii) Mention any three measures that can control the other two diseases.
1. Hands should be washed after using the toilets.
  2. Clean Drinking water
  3. Have adequate sanitation and hygiene facilities.

**51. Match the suitable renewable and non-renewable sources.**

Sources	A	B	C
Renewable	Coal	Wind	Petroleum
Non- Renewable	Hydrogen	Natural gas	Solar Energy

**Ans:**

Sources	A	B	C
Renewable	Hydrogen	Wind	Solar energy
Non-renewable	Coal	Natural gas	Petroleum

**52. Find the odd one out:**

- i) bioalcohol, green diesel, bioethers, petroleum
- ii) cholera, typhoid, scabies, dysentery

**Ans:** i) Petroleum ii) Scabies

**53. A non-renewable resource is a natural resource, if it is replaced by natural process at a rate equal to or faster than its rate of consumption by humans.**

Correct this statement:

**Ans:**

This is an incorrect statement. Correct statement: A **renewable** resource is a natural resource if it is replaced by natural process at a rate comparable or faster than its rate of consumption by humans.

**54. Pick out the appliances that can conserve electric energy.**

Florescent bulbs, copper choke, solar water heater, electric water heater, tungsten bulbs, electronic choke.

**Ans:** Florescent bulbs, solar water heater and electronic choke

**55. Distinguish between the saturated and unsaturated solution at a temperature of 25°C using the data given below**

(Note : Solubility of NaCl is 36g)

**unsaturated solution**

i) 16g NaCl in 100g water

**saturated solution**

ii) 36g NaCl in 100g water



$$\text{Atomicity} = \frac{\text{Molecular mass}}{\text{Atomic mass}} = \frac{28}{14} = 2$$

**63. Calculate the gram molecular mass of water from the values of gram atomic mass of Hydrogen and of Oxygen. Gram atomic mass of Hydrogen = 1g, Gram atomic mass of Oxygen = 16g**

$$\begin{aligned} \text{Gram molecular mass of } \text{H}_2\text{O} &= 2(\text{H}) + 1(\text{O}) \\ &= 2(1) + 1(16) \\ &= 18 \text{ g} \end{aligned}$$

**64. When crystals of lead nitrate on heating strongly produces ----- gas and the colour of the gas is -----**

**Ans:** Nitrogen dioxide (NO) gas, Reddish brown

**65.**

pH =  $-\log_{10} [\text{H}^+]$ . The pH of a solution containing hydrogen ion concentration of 0.001M solution is ---  
----- (3 / 11 / 14) [June-2013, Sep-2014, June-2015]

**Ans:** 3

**66. What type of chemical reaction takes place when i) limestone is heated ii) a magnesium ribbon is burnt in air?**

i) When limestone is heated **decomposition reaction** takes place

ii) When a magnesium ribbon is burnt in air **combination reaction** takes place.

**67. The pH values of certain familiar substances are given below. Analyse the data in the table and answer the following questions**

Substance	pH value
Blood	7.4
Baking soda	8.2
Vinegar	2.5
Household ammonia	12

a) Which substances is acidic in nature?

**Ans:** a) Vinegar

b) Which substances are basic in nature?  
**Household ammonia**

**b) Blood, Baking soda and**

**68. Why does the colour of copper sulphate change when an iron nail is kept in it? Justify your answer.**

Iron is more reactive than copper.

So, iron displaces copper from copper sulphate solution

Blue colour of the copper sulphate solution changes into green colour and the iron nail acquires a brownish look.

**69.**

The hydroxyl ion concentration of a solution is  $1.0 \times 10^{-8}$  M. What is the pH of the solution? \*

[June-2013, Mar-2014]

$$\begin{aligned} \text{pOH} &= -\log_{10} [\text{OH}^-] \\ &= -\log_{10} 1.0 \times 10^{-8} \\ &= -\log_{10} 10^{-8} \\ &= 8 \log_{10} 10 \\ &= 8 \end{aligned}$$

$$\begin{aligned} \text{pH} + \text{pOH} &= 14 \\ \text{pH} &= 14 - \text{pOH} \\ \text{pH} &= 14 - 8 = 6 \end{aligned}$$

**70. Two acids „A“ and „B“ were kept in beakers. Acid „A“ undergoes partial dissociation in water, whereas acid „B“ undergoes complete dissociation in water.**

- i) Of the two acids „A“ and „B“, which is weak acid and which is strong acid?  
ii) What is a weak acid? iii) What is a strong acid? iv) Give one example each.

**Ans:**

- i) „A“ is weak acid and „B“ is strong acid  
ii) Weak acids are acids which ionise partially in water.  
iii) Strong acids are acids which ionise completely in water..  
iv) Weak acid:  $\text{CH}_3\text{COOH}$  Strong acid:  $\text{HCl}$

**71. Identify the wrong statements and correct them.**

- i) Sodium benzoate is used in food preservative. ii) Nitric acid is not used as fertilizer in agriculture.  
iii) Sulphuric acid is called the king of chemicals. iv) The PH of acid is greater than 7.  
v) Acetic acid is used in aerated drinks.

**Ans:**

- i) Correct statement  
ii) Nitric acid is used in the production of ammonium nitrate which is used as a fertilizer in agriculture.  
iii) Correct statement iv) The PH of acid is less than 7.  
v) Carbonic acid is used in aerated drinks.

**72. Assertion:** A greenish layer appears on copper vessels if left uncleaned

**Reason:** It is due to the formation of layer of basic copper carbonate Give your correct option.

- a) Assertion and reason are correct and relevant to each other  
b) Assertion is true but reason is not relevant to the assertion

**Ans:** a) assertion and reason are correct and relevant to each other

**73.** A process employed for the concentration of sulphide ore is ... (froth floatation / gravity separation)

**Ans:** froth floatation

**74.** Any metal mixed with mercury is called an amalgam. The amalgam used for dental filling is -----  
(Ag – Sn amalgam / Cu – Sn amalgam)

**Ans:** Ag – Sn amalgam

**75. Can the rusting of iron nails occur in distilled water? Justify your answer.**

Yes. Rusting of iron nails occurs in distilled water. Distilled water contains dissolved oxygen. So, in the presence of water and oxygen iron nail will rust.

**76. Iron reacts with con. HCl and con.  $\text{H}_2\text{SO}_4$ . But it does not react with con.  $\text{HNO}_3$ . Justify your answer with proper reason**

When iron is dipped in conc.  $\text{HNO}_3$  it becomes chemically inert or passive due to the formation of a layer of iron oxide on its surface.

**77. To design the body of an aircraft, aluminium alloys are used. Give reasons.**

Aluminium alloys are light, have high tensile strength, stronger than aluminium and are corrosion resistant. So, they are used to design the body of the aircraft.

**78. X is a silvery white metal. X reacts with oxygen to form Y. The same compound is obtained from the metal on reaction with steam with the liberation of hydrogen gas. Identify X and Y.**

X - Aluminium (Al) Y - Aluminium oxide ( $\text{Al}_2\text{O}_3$ )

**79. Write down the possible isomers and give their IUPAC names using the formula  $\text{C}_4\text{H}_{10}$ .**

S.No	Isomers	IUPAC Names
1	$\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$	Butane
2	$\begin{array}{c} \text{CH}_3\text{-CH-CH}_3 \\   \\ \text{CH}_3 \end{array}$	2-methyl propane

**80. Diamond is the hardest allotrope of Carbon. Give reason for its hardness.**

In diamond each carbon atom is bonded to four other carbon atoms in tetrahedral fashion leading to a rigid three dimensional structure, accounting for its hardness and rigidity.

**81. An organic compound (A) is widely used as a preservative in pickle and has a molecular formula  $\text{C}_2\text{H}_4\text{O}_2$ . This compound reacts with ethanol to form a sweet smelling compound (B).**

**i) Identify the compounds A and B.**

**ii) Name the process and write corresponding chemical equation.**

i) Compound A is used as a preservative in pickle. So, it is acetic acid or Ethanoic acid (vinegar). Compound B is sweet smelling. So, it is ethyl ethanoate. ii) The process is called esterification.

**82. From the following statements, choose that which is not applicable to the mass of an object**

- i) It is a fundamental quantity.                      ii) It is measured using physical balance.  
iii) It is measured using spring balance.

**Ans:** iii) It is measured using spring balance.

**83. List out the names of the organizations which are not associated with Chandrayaan-I mission from the following:** i) ISRO ii) BARC iii) NASA iv) ESA v) WHO vi) ONGC

**Ans:** ii) BARC v) WHO vi) ONGC

**84. Fill in the blanks:**

i) If force = mass  $\times$  acceleration, then momentum = -----

ii) If liquid hydrogen is for rocket, then ----- is for MRI.

**Ans:** i) Momentum = mass  $\times$  velocity ii) Liquid helium

**85. Correct the mistakes, if any, in the following statements.**

i) One newton is the force that produces an acceleration of  $1 \text{ ms}^{-2}$  in an object of 1 gram mass.

ii) Action and reaction always act on the same body.

**Ans:** i) One newton is the force that produces an acceleration of  $1 \text{ ms}^{-2}$  in an object of **1 kilogram** mass.

ii) Action and reaction is always acting on **two different bodies**.

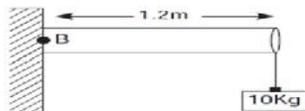
**86. The important use of cryogenics is cryogenic fuels. What do you mean by cryogenic fuels?**

1. Cryogenic fuels are liquefied gaseous fuels which are kept at extremely low temperatures in order to maintain them in a liquid state.
2. Cryogenic fuels mainly liquid hydrogen has been used as rocket fuel.

**87. As a matter of convention, an anticlockwise moment is taken as ----- and a clockwise moment is taken as -----**

**Ans:** Positive, Negative

**88. A 10 Kg mass is suspended from a beam 1.2 m long. The beam is fixed to a wall. Find the magnitude and direction (clockwise or anti-clockwise) of the resulting moment at point B.**



Mass,  $m = 10 \text{ kg}$       Distance,  $d = 1.2 \text{ m}$

Moment =  $F \times d$

$$= m g \times d$$

$$= 10 \times 9.8 \times 1.2$$

$$= 117.6 \text{ Nm}$$

**89. Fill in the blanks**

i) Potential difference : voltmeter; then current -----

ii) Hydro power plant : Conventional source of energy; then solar energy -----

**Ans:** i) ammeter ii) non-conventional source of energy

**90. In the list of sources of energy given below, find out the odd one.**

(wind energy, solar energy, hydro electric power)

**Ans:** hydro electric power

**Reason:** hydro electric power is conventional source of energy, while while others are non-conventional source of energy

**91. Correct the mistakes, if any, in the following statements.**

i) A good source of energy would be one which would do a small amount of work per unit volume of mass.

ii) Any source of energy we use to do work is consumed and can be used again.

a) A good source of energy would be one which would do a **large** amount of work per unit volume of mass.

b) Any source of energy we use to do work is consumed and **cannot** be used again.

**92. We know that  $\alpha$  - rays are harmful radiations emitted by natural radioactive substances.**

i) Which are other radiations from such substances?

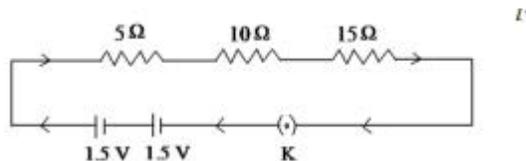
ii) Tabulate the following statements as applicable to each of the above radiations

(They are electromagnetic radiation. They have high penetrating power. They are electrons. They contain neutrons)

- a)  $\alpha$  (alpha) and  $\beta$  (beta)  
b)

Alpha ( $\alpha$ )	Beta ( $\beta$ )	Gamma ( $\gamma$ )
They contain neutrons	They are electrons.	They are electromagnetic radiation. They have high penetrating power.

93. Draw the schematic diagram of an electric circuit consisting of a battery of two cells of 1.5V each, three resistance of 5 ohm, 10 ohm and 15 ohm respectively and a plug key all connected in series.



94. Fuse wire is made up of an alloy of ----- which has high resistance and -----  
a) 37% Lead & 63% Tin b) Low melting point

95. Complete the table choosing the right terms from within the brackets.  
(zinc, copper, carbon, lead, lead dioxide, aluminium.)

+ ve electrode Lead-acid accumulator -----

-ve electrode Leclanche cell -----

Ans: Lead dioxide      Zinc

96. Write about ocean thermal energy.

- The water at the surface of the sea or ocean is heated by the sun while the water in deeper sections is relatively cooler.
- This difference in temperature is exploited to obtain energy in ocean-thermal-energy conversion plants.
- The warm surface-water is used to boil a volatile liquid like ammonia.
- The vapours of liquid are then used to run the turbine of a generator.

97. Fill in the blanks

i) For a motor : a permanent magnet, then for commercial motor : -----

ii) Focal length of a lens; metre, then for power of a lens -----

Ans: i) Electromagnet      ii) Dioptre

98. Correct the mistakes, if any, in the following statements.

i) The magnetic field is a quantity that has magnitude only.

ii) Outside the bar magnet, the magnetic field lines emerge from the South Pole and merge at the North Pole.

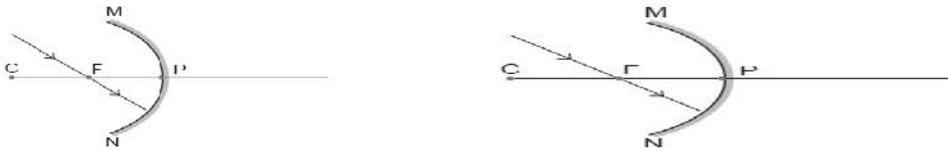
i) Magnetic field is a quantity that has **magnitude and direction**.

ii) Outside the bar magnet, the magnetic field lines emerge from the **North Pole** and merge at the **South Pole**.

**99. The ray diagram shown below is introduced to show how a concave mirror forms the image of an object.**

- Identify the mistake and draw the correct ray diagram.
- Write the justifications for your corrections.

**Ans:**



- A ray passing through the principal focus of a concave mirror, after reflection, will emerge parallel to the principal axis. The emergent ray is not marked in the given diagram.

**100. In traffic signals ----- colour light is used to stop vehicles because it has ----- wave length.**

(Hint: scattering of light is inversely proportional to the fourth power of its wavelength) **Ans:** Red, larger

**101. Write down the names of the specified parts of the human eye.**

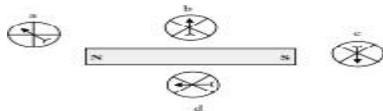
- Dark muscular diaphragm that controls the pupil.
- The screen where the image is formed by the eye lens **Ans:** i) Iris ii) Retina

**102. You know that myopia is a common refractive defects of vision. A person with this defect can clearly see only objects that are near. Using concave lens of suitable power this defect is corrected.**

- Mention the other two types of defects.
- Explain how they can be corrected.

**Ans:** i) Hypermetropia or far sightedness ii) presbyopia  
 i) Hypermetropia can be corrected by using convex lens of suitable power.  
 ii) Presbyopia can be corrected by using bifocal lens

**103. Which of the compass needle orientations in the following diagram correctly describes the magnet's field at that point?**



**Ans:** Needle „a“

**104. A person cannot clearly see objects farther than 12 m from the eye. Name the defect in vision he is suffering from and the lens that should be used to correct this defect.**

**Defect:** Myopia or near-sightedness

**Lens:** Concave lens of suitable power

**105. Define Genetic engineering .**

It is the modification of the genetic information of living organisms by manipulation of DNA i.e. by adding, removing or repairing part of genetic material (DNA)

**106 .Fill ups**

Excretory organ	Disposed as	Excretory products
Kidneys	Urine	Nitrogenous waste products – urea, uric acid, creatinine, etc, <b><u>Carbondioxide and water-vapour</u></b>
Lungs	Exhaled/ Expired air	
Skin	<b><u>Sweat</u></b>	Excess water and salt

**107. Define Brownian movement .**

The phenomenon by which the colloidal particles are in continuous random motion is called Brownian movement .

**108. Match.**

Components	S ymbols
An electric cell	
Plug key	
Wire joint	
A resistor	

**109. Ocean Thermal Energy**

The water at the surface of the sea or ocean is heated by the sun while the water in deeper sections is relatively cooler. This difference in temperature 293 K (20° C) is exploited to obtain energy in ocean-thermal-energy conversion plants.

**110. Match**

- a. Ammonotelic - Fish  
 b. Ureotelic - Mammal  
 c. Uricotelic - Birds  
 d. Nephridia - Annelids

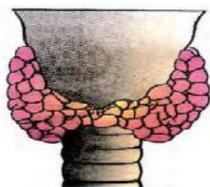
**111. Write any 4 Liquid biofuels for transportation.**

- Bioalcohol
- Green diesel
- Biodiesel
- Vegetable oil
- Bioethers
- Biogas

**112 Fleming's right hand rule:**

Stretch the thumb, forefinger and middle finger of right hand so that they are mutually perpendicular to each other. If the forefinger indicates the direction of the magnetic field and the thumb shows the direction of motion of conductor, then the middle finger will show the direction of induced current.

**113. Draw the following diagram label the parts.**



**114. What are the functions of cerebrum?**

- i. Cerebrum is the seat of consciousness, intelligence, memory, imagination and reasoning.
- ii. It receives impulses from different parts of the body and initiates voluntary activities.

**115. Match**

Apple- Malic acid  
Lemon- Citric Acid  
Grape- Tartaric acid  
Tomato- oxalic Acid

**116. Uses of Aluminium**

1. Household utensils
2. Electrical cable industry
3. Aeroplanes and other industrial parts
4. Thermite welding

**117. Calculate the energy produced when 1 Kg of substance is fully converted into energy.**

$(c = 3 \times 10^8 \text{ ms}^{-1})$

Energy produced  
Mass

$E = mc^2$   
 $m = 1 \text{ Kg}$

Velocity of light

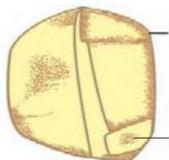
$c = 3 \times 10^8 \text{ ms}^{-1}$

$$E = 1 \times (3 \times 10^8)^2 = 9 \times 10^{16} \text{ J}$$

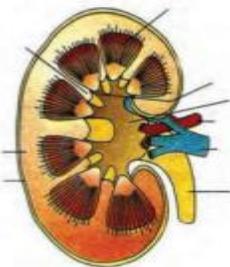
**118. Match**

Alcohol	-OH
Aldehyde	-CHO
Ketone	>C=O
Carboxylic acid	-COOH

**119. Draw the following diagram, label the parts.**

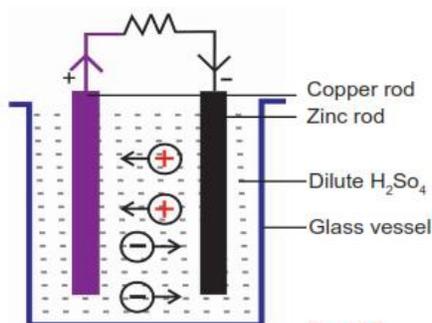


**120. Draw the following diagram, label the parts**

**121. Fill up**

Thyroxin- Personality hormone.

Adrenalin-Emergency hormone.Or fright and flight hormone.

**122. Draw the following diagram , label the parts****123.State the newton's third law of motion.**

States that for every action there is an equal and opposite reaction.

**124. What are the ill effects of consuming alcohol ?**

- i. it tends to slow down the metabolism of our body
- ii. depresses the central nervous system.
- iii. It affects our health by causing ulcer, high blood pressure, cancer, brain and liver damage.
- iv. Nearly 40% accidents occur due to drunken driving.

**125. Name the plants used in the production Bio plastic.**

Plastics made from plants including corn, potatoes .

**126. Pick out the odd one out**

- i. Globulin ,glomerulus, fibrinogen, albumin.
- ii. Mountain goat, big horned sheep, grizzly bear, seal.

**127. Assertion A:** MRI is used to scan the inner organs of human body by penetrating very intense magnetic field.

Reason: R :By use of very intense magnetic field, very high resolution images can be obtained.

**Both A and R are correct.**

**128. Pick out the odd one out.**

Inorganic acid: Hcl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, HCOOH

Basic Nature : blood, baking soda, vinegar, house hold ammonia.

**129. Calculate the number of moles in  $12.046 \times 10^{22}$  atoms of copper.**

$$\begin{aligned} &\text{Number of moles of atoms} \\ &= \frac{\text{Number of atoms}}{\text{Avogadro Number}} \end{aligned}$$

$$= \frac{12.046 \times 10^{22}}{6.023 \times 10^{23}} = 0.2 \text{ moles}$$

**130.i) Composite fruits are formed by all the flowers of ----- .**

**ii) ---- fruit is developed from a single flower with a multicarpellaryapocarpous superior ovary.**

**Ans:** i) whole inflorescence ii) Aggregate

**131. Correct the mistakes**

**Second period** is a short period. It contains two elements (eight)  
Group 18 elements - are called halogen family .(noble gases or inert )

**132. Correct the mistakes**

In a period, the metallic character of the element, increases. while their nonmetallic character  
Decreases. Ans: (Decreases, increases)

**133. Pick out the odd one out.**

Parts of alimentary canal are (pharynx, mouth, buccal cavity, **pancreas**)

**134. The focal length of a concave lens is 2m. Calculate the power of the lens.**

**Solution:**

Focal length of concave lens,  $f = -2 \text{ m}$

Power of the lens,

$$P = \frac{1}{f}$$

$$P = \frac{1}{-2} = -0.5 \text{ dioptr}$$