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BHOPAL REGION
FIRST PRE – BOARD EXAMINATION (2025-26)
(SET-2)

Class	**X**		**Subject**	**Science(086)**
Max.marks	**80**		**Time**	**3 hours**

General Instructions:

(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.

All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions

SECTION- A (BIOLOGY)

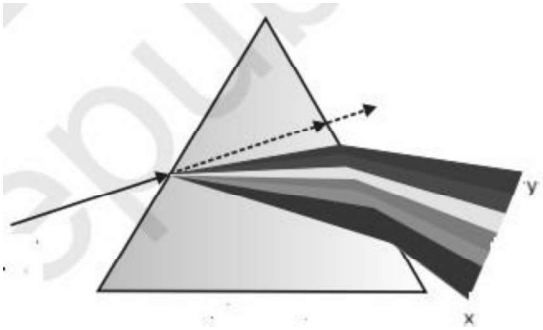
Q.1	What are the products obtained by anaerobic respiration in plants? (a) Lactic acid + energy (b) Carbon dioxide + water + energy (c) Pyruvate (d) Ethanol + carbon dioxide + energy	1
Q2	Raw materials required in the autotrophic mode of nutrition i. Carbon dioxide and water ii. Chlorophyll iii.Nitrogen iv. Sunlight a) (i), (ii) and (iii) b) (i) and (ii) c) (i), (ii) and (iv) d) (i), (ii), (iii) and (iv)	1
Q3	A growing seedling is kept in a dark room. A burning lamp is placed near to it for a few days. The top part of the seedling bends towards the burning candle. This is an example of: (a) Chemotropism (b) Hydrotropism (c) Phototropism (d) Geotropism	1
Q.4	Receptors are usually located in sense organs. Gustatory receptors are present in: a) Tongue b) Nose c) Eye d) Ear	1
Q.5	In peas, a pure tall (TT) is crossed with a pure short plant(tt). The ratio of pure tall plants and pure short plants in the F2 generation is: (a) 1:3 (b) 3:1 (c) 1:1 (d) 2:1	1
Q.6	The phenotype ratio in F_2 generation in a dihybrid cross between pure plants is – a) 1:1 b) 1:2:1 c) 9:3:3:1 d) 9:3:3:3	1
Q.7	An ecosystem is composed of both living and non-living components. Which of the following lists contains only the abiotic components of an ecosystem?	1

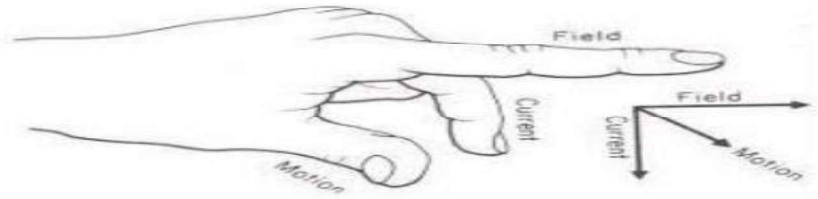
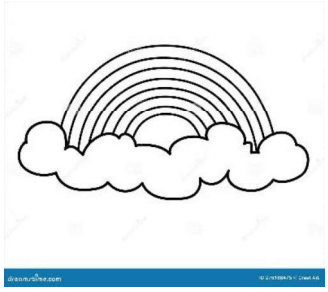
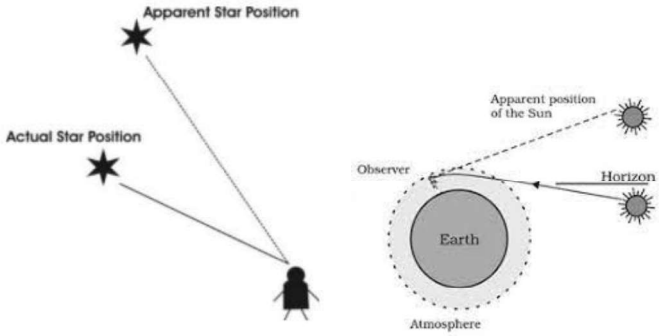
	(a) Sunlight, Soil, Bacteria, Water (b) Temperature, Fungi, Air, Soil (c) Water, Air, Sunlight, Temperature (d) Plants, Air, Water, Animals .	
Q.8	Assertion(A.) : Decomposers play a critical role in every ecosystem. Reason (R) : They are responsible for breaking down dead organic matter and returning essential nutrients to the soil, which are then used by producers. (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, and R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true	1
Q.9	Assertion(A) : The concentration of harmful, non-biodegradable chemicals increases at higher trophic levels in a food chain. Reason (R) : These chemicals are easily broken down and metabolized by the organisms at each trophic level. (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, and R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
Q.10	Identify the below given organ and name the acid present inside it. 	2
Q.11	Student to attempt either option A or B. A. How is the process of breathing different in aquatic organisms compared to terrestrial organisms? Explain why the rate of breathing in aquatic organisms is much faster. OR B. What is translocation in plants? Name the tissue responsible for it and the form in which the food is transport	2
Q.12	In the given food chain, suppose the amount of energy at the fourth trophic level is 5 kJ. What will be the energy available → Grasshopper → Frog → Snake → Hawk	2
Q.13	Which part of the brain controls the following- (a)Balance and posture of the body (b)Respiration (c)Thinking	3
Q.14	With the help of a flow chart explain in brief how the sex of a newborn is genetically determined in human beings. Which of the two parents, the mother or the father, is responsible for determination of sex of a child	3
Q.15	A person consumes a breakfast of boiled eggs and toast. The following questions about the	4

	digestion of this meal (i) The digestion of which component (egg or toast) begins in the mouth? Name the enzyme involved. OR ii) Eggs are rich in protein. Where does the digestion of protein start in the alimentary canal? Name the enzyme and the required condition for its action (iii) What is the role of villi in the small intestine?	
Q.16	Attempt either option A or B A. Draw a diagram of a human female reproductive system and label the part (i) that produces egg (ii) where fusion of egg and sperm take place (iii) where zygote is implanted What happens to human egg when it is not fertilised? OR B. (i) What are the functions of the testes in the human male reproductive system? (ii) What is the role of the placenta during pregnancy? (iii) Name two barrier methods of contraception. .23	2+1+2=5 2+2+1=5
	SECTION- B (CHEMISTRY)	
Q.17	Which of the following statements is correct about an aqueous solution of an acid and of a base? (i) Higher the pH, stronger the acid (ii) Higher the pH, weaker the acid (in) Lower the pH, stronger the base (iv) Lower the pH, weaker the base (a) (i) and (iii) (b) (ii) and (iii) (c) (i) and (iv) (d) (ii) and (iv)	1
Q.18	. Nettle sting is a natural source of which acid? (a) Methenoic acid (b) Lactic acid (c) Citric acid (d) Tartaric acid .	1
Q.19	Chemical formula of washing soda is (a) $Na_2C0_3 . 7H_2$ (b) Na2C03 . 5H2O (c) Na2C03 . 2H2O (d) Na2C03 . 10H2O	1
Q.20.	The ability of metals to be drawn into thin wires is known as:	1

	(a) Malleability (b) Sonority (c) Lustre (d) Ductility	
Q.21.	Which of the following organic compounds contains a carbon-carbon triple bond? (a) Ethene (b) Ethane (c) Ethyne (d) Ethanol	1
Q. 22	An element X is soft and can be cut with a knife. This is very reactive to air and cannot be kept open in air. It reacts vigorously with water. Identify the element from the following (a)Mg (b)Na (c)P (d) Ca	1
Q. 23.	A hydrocarbon has four carbon atoms. Give its molecular formula if it is an alkene. (a)C_4H_{10} (b)C_4H_8 (C)C_4H_6 (d) C_4H_4	1
Q.24	The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true. Assertion (A) : Diamond is extremely hard while graphite is a soft and slippery solid. Reason (R) : Diamond has a rigid three-dimensional tetrahedral network structure, while graphite has a hexagonal layered structure where layers can slide over each other	1
Q.25	Hydrogen being a highly inflammable gas and oxygen being a supporter of combustion, yet water which is a compound made up of hydrogen and oxygen is used to extinguish fire.why?	2
Q.26.	A metal 'M' is dropped into a test tube containing dilute sulphuric acid. A gas 'G' is evolved which is collected and tested. It burns with a characteristic 'pop' sound. (a) Identify the gas 'G'. (b) Suggest a possible metal that 'M' could be. (c) Write the balanced chemical equation for the reaction, using the metal you suggested in part (b	3
Q. 27	Attempt either option A or B.	3

	(A) Draw the electron dot structure of the following. (a) H_2 (b) CH_4 (c) CO_2 OR (B) (i) What is a homologous series? (ii) Write the molecular formula of the second and third members of the homologous series whose first member is methane (CH_4)	
CASE STUDY		
Q.28.	Ores mined from the earth are usually contaminated with large amounts of impurities such as soil, sand, etc., called gangue. The impurities must be removed from the ore prior to the extraction of the metal. The processes Several steps are involved in the extraction of pure metal from ores. Metals and Non-metals used for removing the gangue from the ore are based on the differences between the physical or chemical properties of the gangue and the ore. Different separation techniques are accordingly employed. i) What is the process for the extraction of metals of low reactivity series? ii) What is the general name of Hgs an ore of mercury? iii)In what ways roasting and calcination are different ? OR What is electrolytic refining? Give example of a metal which can be refined by this process	4
Q.29.	Calcium hydroxide reacts slowly with the carbon dioxide in air to form a thin layer of substance 'X' on the walls. (i) What is substance 'X'? (ii) What happens when lead nitrate is heated ? (Write chemical equation only) (iii) Na_2SO_4 (aq) + $BaCl_2$ (aq) → $BaSO_4$ (s) + 2NaCl(aq). Name the insoluble substance formed in the above reaction and its colour. (iv) MnO_2 + 4HCl → $MnCl_2$+ $2H_2O$ + Cl_2 . Identify the substance oxidised and the substance reduced in this reaction (v) Define oxidation and reduction in terms of gain or loss of oxygen. **OR** (i)When water is added to quick lime , a chemical change takes place. Name the type of chemical reaction. (ii)What happens when $FeSO_4$ is heated ? (Write only balance equation) (iii)What is the colour of ferric oxide formed in the above reaction? (iv)Why is the volume of hydrogen gas double to the volume of gas gas in electrolysis of water ? (v)Pb + $CuCl_2$ → $PbCl_2$ + Cu . Will the above reaction take place or not ? Justify your answer..	5
	SECTION –C (PHYSICS)	
Q.30	A student is studying the image formed by a plane mirror and makes the following statements: I. The image formed is always virtual and erect. II. The image is laterally inverted. III. The size of the image is always smaller than the size of the object. Choose from the following the correct option that lists the correct statements. (a) I and II (b) I and III (c) I, II and III (d) II and III	1
Q. 31	Who has stated the Right hand Thumb Rule? a. Orsted b. Fleming	1

	c. Einstein d. Maxwell	
Q. 32	Assertion (A) : The color of the warning signal is red. Reason (R) : The red color has the longest wavelength and scatters the least, so it can be seen from a long distance. (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, and R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
Q. 33	An object is placed beyond 2F of a convex lens. A. Where will image form? B. State size and nature. C. Draw ray diagram.	2
Q.34	Attempt either option A or B. A. How is the strength of magnetic field near a straight current-conductor (i) related to the strength of current in the conductor? (ii) is affected by changing the direction of flow of current in the conductor OR B. A compass needle is placed near a current-carrying wire. State your observation for the following cases, and give reason for the same in each case. (a) Magnitude of electric current in the wire is increased. (b) The compass needle is displaced away from the wire.	2
Q.35	 The diagram shows a narrow beam of white light incidents on one of its refracting surfaces. It splits into seven colours. (i) Which colour of the spectrum has the least wavelength? (ii) What is dispersion of light? iii)Write the order of the colours (X to Y) of the spectrum obtained	3
Q.36	Explain the role of fuse in series with any electrical appliance in an electric circuit. Why should a fuse with defined rating for an electric circuit not be replaced by one with a larger rating?	3

Q.37	An Air conditioner rated 1500W operates for 12 hours a day. (i) How much energy is consumed by the Air conditioner per day? (ii) How much energy is consumed by the Air conditioner for 30 days? (iii) What is the cost of energy for 30 days at the rate of Rs 8 per unit	3
Q.38	Read the paragraph and answer the following questions A magnet must exert an equal and opposite force on a current carrying conductor. We know that current is due to the charge in motion. Thus, it is evident that a charge moving in a magnetic field experiences a force, If the direction of motion is perpendicular to the direction of the magnetic field, the magnitude of force experienced depends upon the charge, velocity, and strength of the magnetic field. Fleming's left-hand rule gives the direction of the magnetic force  (i) If a charged particle is moving along a magnetic field line, What will be the magnetic force on the particle? (ii) An electron is travelling horizontally towards the east. A magnetic field in the vertically downward direction will exert a force in: (a) East (b) West (c) North (d) South (iii)State Fleming's left-hand rule. What does the thumb's direction show.	4
Q.39.	A person is suffering from both myopia and hypermetropia. a) What kind of lens can correct it this defects? b) What are the causes of these defects? c) A person needs a lens of power + 3D of correcting his near vision and - 3D for correcting his distant vision. Calculate the focal length of the lenses required to correct these defects.	5
	OR   	

	a) Name the one common phenomena taking place in above three situation. b) In which situation / condition we can see the real position of stars or sun? c) Draw a labelled diagram of rainbow formation. Why the sky appears white during noon?	