

FIRST PRELIMINARY EXAMINATION

JANUARY 2019



CLASS X

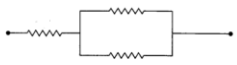
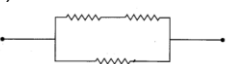
Marking Scheme – SCIENCE [THEORY]

	VALVUE POINTS	Split up marks
SECTION A		
1.	Continuity of the species, Maintaining the population/ Any other point	$\frac{1}{2} + \frac{1}{2} = 1$
2.	Ganga action plan is a multi- crore project came about in 1985 because the quality of the water in the ganga was very poor.	1
SECTION B		
3.	i) The activity of direct collection of rain water which can be stored for direct use or can be recharged into the ground water. ii) It prevents evaporation of water, it spreads to recharge wells, it provides moisture for vegetation, prevents contamination of waste materials (any two)	2
4.	Both are renewable sources of energy <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Bio-mass as Energy Source</p> <ol style="list-style-type: none"> 1. It causes pollution. 2. It is cheap and easily available. 3. Initial cost for building the bio-gas plant is very cheap and its maintenance is also cheap. </div> <div style="width: 45%;"> <p>Hydro electricity as Energy Source</p> <p>It does not cause pollution.</p> <p>It is expensive and not easily available.</p> <p>The initial cost of building the power plant is expensive, its maintenance is also expensive.</p> <p>(Any two)</p> </div> </div> <p>OR</p> <p>The ideal source of energy should have the following qualities:</p> <ol style="list-style-type: none"> 1. should be cheap, easily available and easy to handle. 2. It can be transported easily. 3. It should have high calorific value. 4. It should have proper ignition. temperature. 5. It should not cause any environmental pollution.(any four) 	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
5.	Acquired trait- The traits that do not affect the DNA (sex cells) are not carried to next progeny are called acquired traits.	2

	Inherited trait - The traits which are present in the DNA (sex cells)and passed to the next progeny are called Inherited traits.	
SECTION C		
6.	(a) Tungsten has high melting point and emits light at a high temperature. (b) $E_1 = 250 \text{ W refrigerator}$ in $1 \text{ h} = P_1 \times t$ $= 250 \times 1 = 250 \text{ Wh}$. $E_2 = 1200 \text{ W toaster in } 10 \text{ min} = P_2 \times t$ $= 1200 \times 10/60 = 200 \text{ Wh.}$ ∴ Energy consumed by refrigerator is more than the energy consumed by toaster in the given timings.	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
7.	(a) The absolute refractive index is defined as a ratio of the speed of light in vacuum and in selected medium. (b) refractive index $n = c/v$ $= (3.00 \times 10^8 \text{ m/s})/(2.76 \times 10^8 \text{ m/s}) = 1.09.$	1 1 1
8.	(a) Diagram -magnetic field produced around a current carrying circular loop. (b) The working principle of (i) electric motor – a current carrying conductor when placed in a magnetic field experiences a force. (ii) electric generator-electromagnetic induction OR (a) Oersted’s experiment -Diagram -Explanation (b) Statement-right hand thumb rule	1 1 1 1 1 1 1
9.	$u=15 \text{ cm}$ $f= -10\text{cm}$ $1/u + 1/v = 1/f$ $1/15 + 1/v = -1/10$ $1/v = -1/10 - 1/15 = - 3/30 - 2/30 = -5/30 = -1/6$ $v = -6\text{cm}$ $M = v/u = -6/15 = -0.4$ The image is virtual, erect and diminished	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1

10.	i) Aqueous solution of CuSO_4 . ii) Impure Cu is anode & pure strip of copper is the cathode. iii) When current is passed, pure Cu from the anode dissolve into the solution & an equal no. of Cu atoms from solution are deposited at the cathode.	3
11.	i) Green colour changes to reddish brown. ii) SO_2 , SO_3 . iii) $2\text{FeSO}_4 \longrightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$. OR i) Compounds formed by transference of electrons. Properties: Hard crystalline solids, composed of only ions, high mp (any two) ii) $[\text{Cl}^-]^- \text{Mg}^{2+} [\text{Cl}^-]^-$	3
12.	i) Butane: $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$ Methylpropane: $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_3$ ii) a: -Aldehyde group b: -carboxylic acid group c: -ketonic group	3
13.	1. Violet flower 2. 75% 3. 1:2	3
14.	1. Can bear flowers and fruits earlier than those produce from the seeds Plants produced are genetically similar enough to the parent plant to have all its characteristics 2. Diseases which transmitted through sexual contact are known as sexually transmitted diseases. Examples- Viral- AIDS Bacterial- Gonorrhoea/ syphilis OR 1. To produce germ cells/sperm, To produce the hormone testosterone. 2. The embryo gets nutrition from the mother with the help of a special tissue which is a disc embedded in the uterine wall. Provides large surface area for glucose and oxygen to pass from the mother to the embryo, Removal of waste materials from the embryo.	3
15.	1. Help in the decomposition of dead bodies of plants and animals and hence act as a cleansing agent 2. Help in recycling the materials in the ecosystem and enrich the soil. They create space for the newer generation of organisms.	3
SECTION D		
16.	(a) A fuse is an electrical safety device that operates to provide <u>overcurrent</u> protection of an electrical circuit. Its essential component is a metal wire or strip that melts when excess current flows through it, thereby protect the electrical appliance from damage. (b) Working principle of fuse wire – Joules law of heating. (c) working of a domestic electric circuit. -Diagram -explanation OR (a) Definition- electromagnetic induction	1 1 2 1 1

	<p>(b) Explanation-current is induced in a secondary coil due to the magnetic field generated in the primary coil. -Diagram</p> <p>(c) Statement - Fleming's right hand rule.</p>	<p>1</p> <p>2</p> <p>1</p>
17.	<p>(a) When the light around you is low, the iris makes the pupils larger to gather more light for improving sight. When the light around you is bright, it decreases the size of your pupils letting only small amount of light onto the retina to avoid any stress to the sensitive parts of your eyes.</p> <p>(b) Definition-Presbyopia.</p> <p>(c) Two causes –Presbyopia -correction using bi-focal lenses</p> <p>(d) $f = -40\text{cm}$ $P = 1/f$ $= -100/40$ $= -2.5 \text{ D}$</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>
18.	<p>a) i) non-metal. ii) C is less reactive than 'A'. iii) C is smaller than B bcs of increased effective nuclear charge experienced by its valence shell. (across a period, the effective nuclear charge increases). iv) negative ion (anion)</p> <p>b) They can form salts by combining with metals.</p> <p>c) He, Ne & Ar. All of them belong to the 18th group (Noble gas group). OR i) Oxides which can behave as both acids & bases. Amphoteric oxides:- ZnO & Al_2O_3 ii) They can produce H_2 gas when react with dilute acids: $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$ They can produce CO_2 gas by reacting with metal carbonates or metal hydrogen carbonates. $\text{HCl} + \text{NaHCO}_3 \rightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$ iii) They can react with metals & destroy them.</p>	5
19.	<p>i) A series of carbon compounds having similar molecular structures such that between any two adjacent members there is a difference of CH_2 group. Eg: Alkane : General formula: $\text{C}_n\text{H}_{2n+2}$ Methane CH_4 , Ethane C_2H_6, Propane C_3H_8.</p> <p>ii) Benzene: C_6H_6  Cyclohexane: </p> <p>iii) (a) Carbon compounds having same molecular formula but different structural formulae. (b) An atom or group of atoms that gives some special properties to carbon compounds.</p>	5
20.	<p>1. Diagram, Text book- Page 115, fig 7.5</p> <p>2. Brain – Cranium/skull Spinal cord- Vertebral column</p> <p>Synapse is a minute gap between two adjacent neurons.</p>	5
21.	<p>1. a. For the gaseous exchange b. To prevent collapse when there is no air in it.</p> <p>2. No acidic medium is created, digestion of protein will get affected. Bile juice</p> <p>3. It is an enzyme which acts on starch and converts it into simple sugar(maltose)</p> <p>OR</p> <p>1. Diagram text book page no.106, fig 6.1</p> <p>2. Artery-Thick wall/Absence of valves any other point Vein – Thin wall/Presence of valves or any</p>	5

	3. Pulmonary vein. Right auricle	
SECTION E		
22.	<p>The effective resistance of parallel combination $R_p = R/2$ The effective resistance of series combination $R_s = 2R$ Therefore $R_s = 4R_p$, i.e. equivalent resistance increases four times. OR (i) When two $6\ \Omega$ resistances are in parallel and the third is in series combination to this, the equivalent resistance will be $9\ \Omega$.</p>  <p> $1/R_p = 1/R_1 + 1/R_2 = 1/6 + 1/6$ $R_p = 3\ \Omega$ Total resistance $R' = R_p + R$ $= 3 + 6 = 9\ \Omega$ (ii) When two $6\ \Omega$ resistances are in series and the third is in parallel to them, then it will be $4\ \Omega$. </p>  <p> $R_s = R_1 + R_2 = 6 + 6 = 12\ \Omega$ Total resistance $R' = 1/R_s + 1/R$ $= 1/12 + 1/6$ $= 4\ \Omega$ (Diagram optional) </p>	<p>$1/2$</p> <p>$1/2$</p> <p>1</p> <p>$1/2$</p> <p>$1/2$</p> <p>$1/2$</p>
23.	<p>(a) Diagram - refraction of light through a glass prism.</p> <p>(b) Factors on which angle of deviation depend - Angle of incidence -nature of the material (any two)</p>	<p>1</p> <p>$1/2$</p> <p>$1/2$</p>
24.	<p>i) Metal X is more reactive than metal Y. ii) Displacement reaction. OR i) Brisk effervescence & evolution of a colourless odourless gas. ii) Pink red (moderately acidic pH range: 2-3)</p>	2
25.	<p>i) a) Combination reaction b) Decomposition c) Double displacement reaction ii) Ethanoic acid (acetic acid) / CH_3COOH.</p>	2
26.	<p>1. The guard cells swell when water flows into them, causing the stomatal pore to be open. When guard cells lose water, it shrinks, causing the stomatal pore to be closed.</p>	2
27.	<p>Elongation of nucleus, Nuclear division, Cytoplasmic division, Organism divides into two. OR Diagram in correct sequence, Budding in yeast</p>	2