

INDIAN SCHOOL MUSCAT

FINAL EXAMINATION

JANUARY 2021

CLASS X

Marking Scheme – SCIENCE

SET B

SECTION - A		
Q.N O.	VALUE POINTS	
1.	Oxidised- Zn , Reduced- CuO OR $C_6H_{12}O + 6O_2 \rightarrow 6CO_2 + 6H_2O$ +heat energy	1
2.	Basic copper carbonate	1
3.	Glowing splinter- pop sound	1
4.	This is because advance sunrise and delayed sunset due to atmospheric refraction	1
5.	The reciprocal of focal length (f). Measurement of the focal length in a meter. (OR)The SI unit of power of lens is diopetre whose focal length is one meter	1
6.	The nature of this image is virtual and erect (OR) Given, lens of power $P = (-2.0)D$ Power, $P = 1 / f$ $f = 1 / P$ $= -1 / 2$ $f = -0.5 \text{ m}$	1
7.	When an electric current flows, the solenoid acts as an electromagnet. The shape of the magnetic field is very similar to the field of a bar magnet .	1
8.	Fleming's right-hand rule gives which direction the current flows. The right hand is held with the thumb, index finger and middle finger mutually perpendicular to each other (at right angles), as shown in the diagram. The thumb is pointed in the direction of the motion of the conductor relative to the magnetic field.	1
9.	To measure the potential difference between two points , a voltmeter should be connected in parallel to the points . (OR) The resistance of wire increases,	1
10.	Valves are present to prevent the backflow of blood .	1

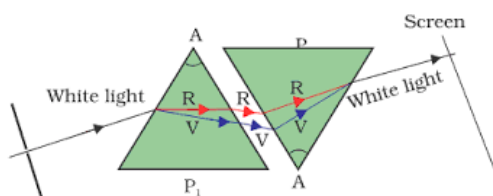
11.	a) Guard cells b) Heterotrophs OR Viruses do not show movements outside the host cells. They show movements at the molecular level inside the living cells.	1
12.	The increased concentration of chemicals at any tropic level is called biological magnification OR Since so little energy is available for the next level of consumers. The loss of energy at each step is so great.	1
13.	i) Aerobic respiration ii) Anaerobic respiration	1
14.	(d) A is false, but R is true.	1
15.	b) Both Assertion & Reasoning are correct, Reason is not correct explanation of Assertion	1
16.	Option C –A is true but R is false	1
17.	BIOLOGY- CASE BASED QUESTIONS	1x4
	i) c	
	ii) d	
	iii) c	
	iv) c	
	v) d	
18.	CHEMISTRY- CASE BASED QUESTIONS	1x4
	i) Li, Na, K, Rb , Cs	
	ii) Bromine	
	iii) Fluorine	
	iv) Increases	
	v) Ionic	
19.	PHYSICS- CASE BASED QUESTIONS	1x4
	i) B	
	ii) C	
	iii) B	

	iv) D	
	v) D	
20.	PHYSICS- CASE BASED QUESTIONS	1x4
	i) D	
	ii) B	
	iii) A	
	iv) D	
	v) D	
SECTION - B		
21.	<p>Blood – presence of RBC. Flows through blood vessels.</p> <p>Lymph – absence of RBC Flows through lymphatic vessels (any relevant point)</p> <p style="text-align: center;">OR</p> <p>Artery – thick wall Deeply seated</p> <p>Vein – thin walled Superficial (any relevant point)</p>	2
22.	<p>Quantity of dissolved oxygen is fairly low in water as compared to the amount of oxygen in air. Aquatic organisms therefore have to breathe faster than terrestrial organisms to absorb the required amount of oxygen from the water.</p>	2
23.	<p>Explanation with diagram (1)</p> <p>Ions (1)</p> <p>OR</p> <p>Yes.(0.5)</p> <p>Each example-0.5</p>	2
24.	<p>Alkene-C_2H_4 , C_4H_8 (0.5 each)</p> <p>Alkyne- C_3H_4 , C_5H_8</p>	2
25.	<p>Scattering is the phenomenon in which light ray is redirected in different directions on passing through particles of dimensions comparable to the wavelength of the light. The particles of very small size scatter mainly blue light whereas, the particles of larger size scatter lights of longer wavelengths. The sky appears blue because the fine particles in the atmosphere scatter blue light most among all the components of white light.</p>	2
26.	<p>Power (P) is given by the expression, $P = VI$ Where, Voltage, $V = 220\text{ V}$ Current, $I = 5\text{ A}$ $P = 220 \times 5 = 1100\text{ W}$ Energy consumed by the motor = Pt</p>	2

	<p>Where, Time, $t = 2 \text{ h} = 2 \times 60 \times 60 = 7200 \text{ s}$ $\sim P = 1100 \times 7200 = 7.92 \times 10^6 \text{ J}$ Therefore, power of the motor = 1100 W Energy consumed by the motor = $7.92 \times 10^6 \text{ J}$</p>	
SECTION - C		
27.	<p>Gregor Johann Mendel, through consistence studies on garden pea arrived that laws of inheritance. He used plants that were pure breeding for a trait and considered contrasting character like- tall and short size, round and wrinkled seeds, white and violet flower etc. 1 M In his experiment he crossed plants with contrasting character, studied the progeny of first generation(F1) and second generation(F2) and calculated ratios of plants with contrasting that were original paternal type or different. 1 M For example, he crossed a tall pea plant with a dwarf pea plant. He found that in first generation(F1) all the plants produced were tall. Since F1 plants are all tall and genotypically are "Tt" they have inherited "t" from one parent which is not expressed, as it results in dwarf plant. 1 M</p> <p style="text-align: center;">OR</p> <p>Human beings have 22 pairs of autosomes and one pair of sex chromosome. This pair is XX in females and XY in males. Thus, if parents are. 1M This cross shows that females produce all similar gametes, carrying X chromosome. While males produce two types of gamete 50% with X and 50% with Y chromosome. 1M Hence, when a female gamete fuses with sperm with X chromosome, a female child is produced and when it fuses with sperm with Y chromosome, a male child is produced. So, it is male that determine the sex of the child. 1M</p>	3
28.	<ol style="list-style-type: none"> 1. Organisms of first trophic are producers. Organisms of second trophic level are herbivores. Producers are autotrophic, i.e., manufacture their own food from inorganic raw materials. Herbivores are animals which feed on producers for obtaining food and its contained energy. 2M 2. Plastics are non-biodegradable substances as they cannot be broken down by decomposers. 1 M 	3
29.	<ol style="list-style-type: none"> 1. Sudden buildup of lactic acid in our muscles. 1M 2. a. Arteries carry blood away from the heart ½ M b. Vein carry blood back to the heart. ½ M 3 a. Small intestine ½ M b. Large intestine ½ M 	3
30.	<p>Sunlight (1) Black and white photography (1) Slaked lime formed with hissing sound-evolution of heat energy (0.5 + 0.5)</p>	3
31.	<p>Cu (1) Fe with example(0.5 +0.5) Mn. with example(0.5 +0.5)</p>	3
32.	<p>Reason-(0.5 each) One difference with examples (1.5) Aldehyde-0.5 Carboxylic group-0.5)</p>	3
33.	<p>(a) The dispersion of white light occurs because colors of white light travel at different speeds through the glass prism. ... When white light consisting of seven colors falls on a glass</p>	3

prism, each color in it is refracted by a different angle, with the result that seven colors are spread out to form a spectrum.

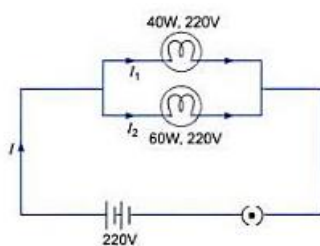
(b)



SECTION - D

34.

(i)



(ii) Voltage across both the bulbs is same and is equal to 220V.

Current through 40W lamp = $I_1 = P_1/V = 40/220$ A

Current through 60W lamp = $I_2 = P_2/V = 60/220$ A

Total current drawn from the electric supply = $40/220 + 60/220 = 0.45$ A

(b) $R_1=0.2\text{ohm}$, $R_2=0.3\text{ohm}$, $R_3=0.4\text{ohm}$, $R_4=0.5\text{ohm}$, $R_5=12\text{ohm}$

As all are connected in series effective resistance would be :

$R_{\text{eff}}=R_1+R_2+R_3+R_4+R_5$

$=0.2+0.3+0.4+0.5+12$

$=13.4\text{Ohms}$

By ohms law : $V=IR$

$I=V/R$

$=9/13.4$

$=0.67$ A

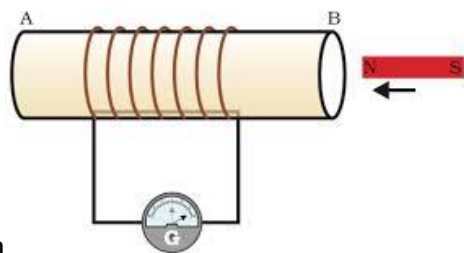
As resistors are connected in series. $I=I_1=I_2=I_3=I_4=I_5$

Hence current across 12ohms resistor is 0.67A

(OR)

(a)

5



Explanation

The direction of electric current Fleming's right hand rule is applied. According to it, if we stretch the forefinger, middle finger and thumb of our right hand mutually perpendicular in such a way that thumb points along the direction of motion of conductor, forefinger along the direction of magnetic field; then the middle finger points along the direction of induced current.

(b)

(i) When current in P is changed, the field associated with Q will vary causing an induced current in Q.

(ii) If both the coils are moved in the same direction with same speed, there will not be any change in the field associated with Q. Hence no current will be induced in Q.

35.	<p>CaOCl₂ (0.5) Calcium oxy chloride (0.5)</p> <p>Ca(OH)₂ + Cl₂ → CaOCl₂ + H₂O (1)</p> <p>Sodium bicarbonate(1)</p> <p>NH₃ + CO₂ + H₂O + NaCl → NaHCO₃ + NH₄Cl (1)</p> <p>Any one use (1)</p> <p>OR</p> <p>X- NaOH-Sodium hydroxide (1 + 1)</p> <p>Equation (1)</p> <p>Neutralisation reaction(1)</p> <p>Equation(1)</p>	5
36.	<ol style="list-style-type: none"> Oestrogen and Testosterone 1 M Fertilization requires bringing of male gametes to the female gamete which is possible only when pollen grain is brought from the anther to the stigma in the process of pollination. 2 M <ol style="list-style-type: none"> Genetically similar to the parent plant Earlier production. 2 M Formation of ova, Secretion of hormones estrogen and progesterone. 1 M 	5