PRE BOARD EXAMINATION 2022

CLASS: X (SET-1)

SUBJECT: SCIENCE (086)

Max. Marks:40

Gener	al Instructions:								
i) All questions are compulsory.									
ii) Th	The question paper has three sections and 15 questions. All questions are compulsory.								
iii) Se) Section–A has 7 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and								
Se	Section–C has 2 case based questions of 4 marks each.								
iv) Int	<i>v</i>) Internal choices have been provided in some questions. A student has to attempt only one of								
th	the alternatives in such questions.								
v) The	e English version sh	all always prevail in case	of any discrepancy or inconsistency bet	ween					
Eı	nglish and Hindi								
		SECTION	I - A						
1	What type of core is used to make electromagnets? A beam of alpha particles enters a chamber moving along the magnetic field. What is the magnetic force experienced by the beam (give justification)?								
			OR						
	Name the factors o	n which force acting on a	current carrying conductor will						
	depend. When is the	he force experienced by	a current carrying conductor placed						
	in a magnetic field	d greatest?							
2	(a) Write the electron dot structure of C_2H_2 and C_2H_6 . Which of the two is saturated?								
	(b) How many covalent bonds are there in a molecule of C_2H_2 and C_2H_6 ?								
3	The atomic numbers and electronic configuration of three elements X,Y and Z are as follows:								
	Element	Atomic number	Electronic configuration						
	X	3	21						
	X V	9	2,1						
	7	11	2,7,						
	 (a) Which two of these elements will show similar chemical properties? Why? (b) Arrange these three elements in the increasing order of their atomic size. OR (c) What is the number of valence electrons in the atoms Y and Z? (d) Which two elements amongst are likely to be metals? Why? 								

4	DDT is a pesticide which is widely used in agriculture. Through run off it reaches to the water bodies and enters into different food chains. One of the aquatic food chains is given below. Water →Zooplankton → Small fish Large fish →Fish Eating Birds (DDT 0.003 PPB) (DDT 0.04 PPM) (DDT 0.05 PPM) (DDT 2 PPM) (DDT 5 PPM) (a) Name the process responsible for increasing DDT concentration in food	2					
	chain.(b) What is impact of DDT on fish eating birds?						
	OR						
	Consider the following food chains:						
	 i) Plants → Mice → Snake → Hawks ii) Plants → Mice → Hawks If energy available at the producer level of both food chains is 100 J, in which case hawks get more energy from food and by how much? Justify your answer? 						
5	Name a multi-cellular organism that divides by fragmentation? Why is it not possible for all multi-cellular organisms to divide by fragmentation?	2					
	OR						
	Observe the given figure and name the organs/parts where the following processes takes place:						
	(a) Production of egg (b) Site of fertilisation						
	(c) Site of implantation						
	(d) Entry of the sperms						
6	(a) Which part of flower changes into seed after fertilization?(b) Root and shoot develops from which part of the embryo?	2					
7	What is the source of variation in populations of organisms? In sexual reproduction if each new generation is to be the combination of the DNA copies from two pre-existing individuals, then each new generation will end up having twice the amount of DNA that the previous generation had. How is this problem solved?	2					
	SECTION - B						
8	What are magnetic field lines? Explain why magnetic field lines are closed curves? The given magnet is divided into three parts A, B and C as: $\boxed{A \ B \ C}$ Name the part where the strength of magnetic field is (<i>i</i>) maximum, (<i>ii</i>) minimum	3					

The values of current values of potential of	nt I flowin lifference	g in a given V across the	resistor for resistor are	the correspond given below:	ding	
I(amperes)	0.	1.	2.	3.0	4.0	
V(volts)	1. 6	3. 4	6. 7	10. 2	13. 2	
Plot a graph betwe	en V and	I and calcul	ate the resis	stance of that	resistor.	
Find the current dr shown in the figure	esistors as					
shown in the ngul		\frown				
	R ₁	$n^{n^{n^{n^{n^{n^{n^{n^{n^{n^{n^{n^{n^{n$	² μ10 Ω			
	R	10Ω F	^R 3 μ ^N μ ^N 10 Ω			
		 3 ∨			Y	
(a) How many ison C ₅ H ₁₂ ? Draw the str	ners are por	ossible for th all possible i	e compound	l with the mol	ecular formula	
 (a) How many ison C₅H₁₂? Draw the str (c) Write the next 	ners are po ructure of a xt two hom	ossible for th all possible i nologues of	e compound isomers. C5H12.	l with the mol	ecular formula	
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	(c) Write two impacts of global warming on human beings.						
Me the	endel crossed Ta m, and calculate	all pea plants ed the percen	with Dwarf pe tages of tall or	ea plants to produce short progeny.	uce progeny from		
	(a) Work out a cross between pure tall pea plant and pure dwarf pea plant up to F2 generation.						
	(b) Give the phenotypic and genotypic ratio of F2 generation for the above cross.						
			FCTION - C				
Stu	dy this table re	elated to mate	erial and their	resistivity and	answer the		
fol	lowing questio	ns?					
			Material		Resistivity (\Box m)		
		Silver			1.60×10^{-8}		
		Copper			1.62×10^{-8}		
		Aluminum	l		2.63×10^{-8}		
		Tungsten			5.20×10 ⁻⁸		
0	Conductors	Nickel			6.84×10 ⁻⁸		
		Iron			10.0×10^{-8}		
		Chromium			12.9×10^{-8}		
		Mercury			94.0×10 ⁻⁸		
		Manganese	e		1.84×10^{-6}		
		Constantar	n (alloy of Cu	and Ni)	49×10 ⁻⁶		
A	Alloys	Manganes	e (alloy of Cu	, Mn and Ni)	44×10 ⁻⁶		
		Nichrome (alloy of Ni, C	r, Mn and Fe)	100×10 ⁻⁶		
		Glass			$10^{10} - 10^{14}$		
		Hard rubbe	⊃r		$10^{13} - 10^{16}$		
I	nsulators	Ebonite			$10^{15} - 10^{17}$		
		Diamond			$10^{12} - 10^{13}$		
		Paper(dry)			1012		
(i)	(i) What is the range of resistivity in metals, good conductors of electricity? (a) 10^{-8} to 10^{-6} Ω m (b) 10^{-6} to 10^{-4} Ω m						
	(c) 10^{10} to $10^{14} \Omega m$ (d) 10^{12} to $10^{14} \Omega m$				d) 10^{12} to $10^{14} \Omega$ m		
(ii) ele	(ii) Which property of the alloy makes it useful in heating devices like electric iron, toasters, immersion rods etc.?						
	(a) Higher resistivity (b) Do not oxidise at low temperature						
	(c) Do not red	uce at high t	emperature	(d) Oxidise at	t high temperature		
(iii) Which is the	best conduct	ing metal?				
	(a) Cu (b) Ag	(c) Au	(d) Hø			

	(iv) Which of the following is used as a filament in electric bulbs?							
	(a) Nichrome (b) Tungsten (c) Manganese (d) Silver							
15	Savita's grandmother often blames her mother for giving birth to 3 daughters and no son							
	and therefore wants another marriage of her son. Answer the following questions on sex							
	determination.							
	(i) How many pairs of chromosomes are there in human beings?							
	(ii) How is the sex of the human offspring determined?							
	(iii) Draw a diagram depicting sex determination in humans.							
	OR							
	A true-breeding, purple-flowered, yellow pea plant (PPYY) is crossed to a white- flowered, green pea plant (ppyy).							
	A. Write out the parental cross.							
	B. What gametes can be produced by each parent?							
	C. What is the genotype of the F1 generation? What is the phenotype?							
	D. What are the possible gametes that can be produced from each plant F1 plant?							