Gurukul
The School

SAMPLE PAPER 1

Half Yearly Examination, 2018-19

Sub: SCIENCE

Class – X

Time Allowed: 3 hrs. **Maximum Marks : 80**

Name _____ **Sign of Invigilator _____**

General Instructions :

1. ***The question paper comprises of two sections A and B. You are to attempt both the sections.***
2. ***All questions are compulsory.***
3. ***All questions of section A and all questions of section B are to be attempted separately***
4. ***Question number 1 to 2 in section A are one mark questions. These are to be answered in one word or in one sentence***
5. ***Question number 3 to 5 are two marks questions. These are to be answered in about 30 words each.***
6. ***Question number 6 to 15 are three marks questions including a value based question. These are to be answered in about 50 words each.***
7. ***Question number 16 to 21 are five marks questions. These are to be answered in about 70 words each.***
8. ***Question numbers 22 to 27 in Section-B are Practical based questions. Each question carry two marks.***

SECTION-A

1	What are olfactory indicators? Give an example.	1
2	Define Reflex action giving an example.	1
3	It is the responsibility of the government to arrange for the management and disposal of waste. As an individual you have no role to play. Do you agree? Support your answer with a reason.	2
4	A solenoid carrying electric current. What is magnetic field? How is the direction of magnetic field at a point determined ?	2
5	List any two common methods by which solid wastes of urban areas are disposed off.	2
6	(a) A solution of a substance 'X' is used for testing carbon dioxide. What will be the reaction of 'X' with carbon dioxide? Write balanced equation for this reaction. (b) How is 'X' obtained? Give chemical equation.	3
7	(a) The surface of some metals acquires dull appearance when exposed to air for a long time. Name the process responsible for this and give examples of three metals stating the chemical compound formed in each case. (b) Explain why calcium metal after reacting with water starts floating on its surface ? Write the chemical equation for the reaction.	3
8	(a) Show the formation of NaCl from sodium (At No. 11) and chlorine (At No. 17) atoms	3

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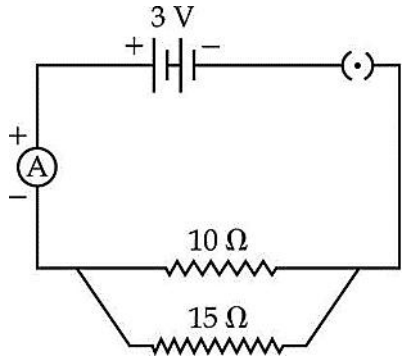
		by the transfer of electrons. (b) Why does sodium chloride have a high melting point	
	9	(a) Give reasons: (i) Zinc oxide is considered as amphoteric oxide. (ii) Non-metals generally do not displace hydrogen from dilute acids. (iii A small amount of silver is added to pure gold for making ornaments. (b) Name the constituents of the following alloys: (i) Bronze (ii) Stainless steel In what way are these alloys different from their constituents **OR** (a) How is copper obtained from its sulphide ore ? Write balanced chemical equations. (b) Explain electrolytic refining of impure copper with the help of a diagram**.**	3
	10	During respiration, pyruvic acid is produced from glucose. State the end products formed from it on further break down in each of the following cases:- (a) Yeast in absence of oxygen (b) lack of oxygen in muscles (c) Presence of oxygen in mitochondria	3
	11	Describe any three methods of asexual reproduction seen in animals with the help of neat labelled diagrams.	3
	12.	(a)Hydrogen has been used as a rocket fuel. Would you consider it a cleaner fuel than CNG? Why or why not? (b) Fire wood is our conventional fuel. List any two reasons of replacing it with the alternate sources of energy.	3
	13	In a school, there are 70 teachers and most of them have personnel vehicles. There are many teachers who come from same place, but everyone prefers coming by their personnel vehicle. On the other hand, the students of the school either come by buses or carpooling. Answer the following questions based on the above situation: [a] whose practice of commuting to school is nature friendly? Justify your answer [b] what values are being promoted by teachers and students [c] in what other ways can we become nature friendly?	3
	14	(a) What is 'environmental pollution'? (b)Distinguish between biodegradable and non-biodegradable pollutants. (c)State two problems caused by the non-biodegradable waste that we generate in our daily life. (d)Choose the biodegradable pollutants from the list : Sewage, DDT, radioactive waste, agricultural waste.	3
	15	Study the following circuit and answer the questions that follow:  	3

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	(a) State the type of combination of the two resistors in the circuit. (b) How much current is flowing through (i) 10 Ω and 15 Ω resistors? (c) What is the ammeter reading?	
16	(a) Write the name and chemical formula of the calcium compound used for disinfecting water. How is this compound manufactured? Write chemical equation for the reaction involved. (b) What is baking powder? What happens when it is heated or mixed with water? Write chemical equation for the reaction involved	5
17	(a) Draw a sectional view of the human heart and label on it. Right ventricle, aorta, pulmonary veins. (b) State the functions of the following components of transport system: (i) Blood (ii) Lymph **OR** (a) Draw the structure of a nephron and label the following on it. Renal artery, collecting duct, glomerulus, Bowman's Capsule. (b) What happens to glucose that enters the nephron along with filtrate? Name the organ of excretory system where the urine is stored.	5
18	(a) What is STD's? List two examples of each disease caused due to : (i) bacterial infection (ii) viral infection. (b) How do these infectious diseases spread from one person to another person? (c) Which device may be used to prevent the spread of such diseases?	5
19	(a) Name the two main organs of our central nervous system. (b) Which one of the two plays a major role in sending command to muscles to act without involving thinking process? Name the phenomenon involved. (c)Name the receptors which detect (i) taste (ii) smell	5
20	(a) Draw V – I graph for an ohmic resistor. What does the slope of this graph indicate? (b) A potential difference V exists across a conductor of length l and cross section area A. How is the resistance R of the conductor affected when only V is halved, only l is halved and only A is halved? Justify your answer in each case.	
21	(a) What are magnetic field lines? State a method of determining the direction of magnetic field at a point. (b) Draw two field lines around a bar magnet along its length on its two sides and mark the field directions of them by arrow marks. (c) List any three properties of magnetic field lines.	5
	SECTION-B	
22	Zinc granules were added to zinc sulphate, copper sulphate aluminium sulphate and iron sulphate solutions as shown below. In which beaker the student would observe the deposition of metal on zinc and why?	2

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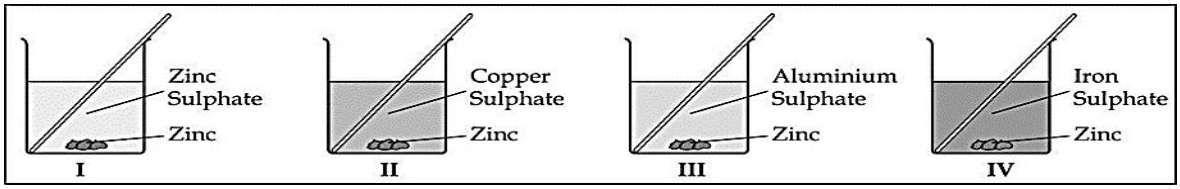
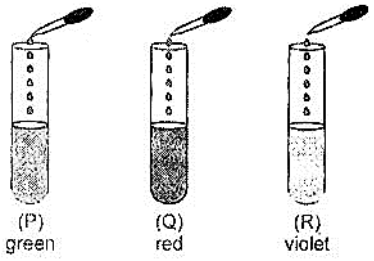
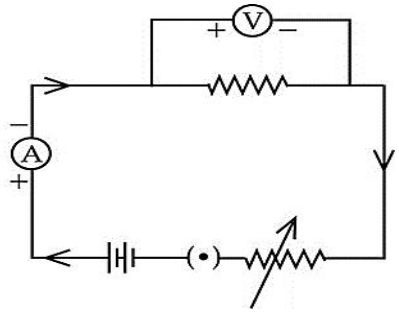


23 (a) What is universal indicator?

(b)On adding a few drops of universal indicators to three unknown colourless solutions (P), (Q), and (R) taken separately in three test tubes shown in the following diagrams, a student observed the changes in colour as green in (P), red in (Q) and violet in (R). Write these changes in decreasing order of their reactivity.

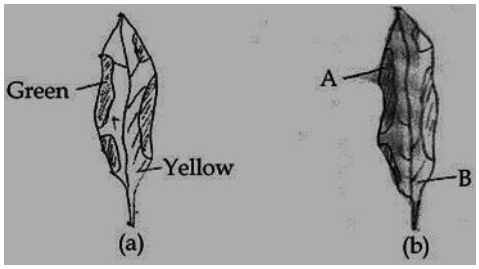


24 In the circuit shown select two circuit components which are connected in series. 2



25 In a voltmeter there are 20 divisions between the zero mark and 0.5 V mark. What is the least count of the voltmeter? 2

26 2



(a) What would be the colour of the areas 'A' and 'B'?

(b) During the experiment, why is the leaf dipped in alcohol?

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	27.	Draw and explain the steps of aseual reproduction in yeast. Name this mode of asexual reroduction.	2
		-o0o0o0o-	

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MARKING SCHEME - SAMPLE PAPER-1
HALF YEARLY EXAMINATION-2018-19
SUB: SCIENCE
CLASS – X

Section- A

1	An Olfactory indicator is a substance whose smell varies depending on whether it is mixed with an acidic or basic solution. Olfactory indicators can be used in the laboratory to test whether a solution is a base or an acid, a process called olfactory titration. Onion , clove oil and vanilla extract are examples.	1
2	Reflex Action : The nervous system uses electrical impulses to allow very quick responses. Reflex actions are done without thinking. Example : If we touch a boiling plate we will snatch our hand back automatically.	1
3	Refer Text Book Page No:261	1+1
4	The region surrounding a magnet, in which the force of a magnet can be detected is called magnetic field. The direction of the magnetic field is taken to be the direction in which a north pole of a compass needle moves inside it.	1+1
5	1. Landfill 2. Incineration	.5x4
6	[a] Substance X-Calcium hydroxide. ,'x' is lime water (calcium hydroxide). It reacts with carbon dioxide to form calcium carbonate and water. The balanced chemical equation of the reaction is as follows: $Ca(OH)_2(aq) + CO2(g)$ -----> $CaCO_3(s) + H_2O(l)$ (b) Calcium hydroxide is obtained by reaction of calcium oxide and water. $CaO(s) + H_2O(l)$ □□→ $Ca(OH)_2(aq)$ + Heat	1+1+1
7	a) It is because they react with various gases present in the air like oxygen and carbon dioxide to form metal oxide and metal carbonate. eg 1: silver articles become black (Ag_2S) eg 2 : copper reacts with moist CO2 and acquires a green coating ($CuCO_3$) eg 3 : iron acquires a brown coating of rust(Fe_2O) b) Calcium metal reacts with water to form calcium hydroxide and hydrogen gas. The reaction of calcium with water is less violent (compared to Na and K). ... Calcium starts floating on water because it becomes lighter due to the bubbles of hydrogen gas formed stick to its surface. $Ca\ (s) + 2H_2O\ (l) \rightarrow Ca(OH)_2\ (aq) + H_2\ (g)$	1x3
8	(i) 	1x3

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	(ii) Sodium chloride has a high melting and boiling point. There are strong electrostatic attractions between the positive and negative ions, and it takes a lot of heat energy to overcome them. Ionic substances all have high melting and boiling points.Sodium chloride has a high melting and boiling point. There are strong electrostatic attractions between the positive and negative ions, and it takes a lot of heat energy to overcome them. Ionic substances all have high melting and boiling points.	
9	A [i]Metal oxides are usually basic and they react with acids to form their respective salts. But amphoteric oxides react with both acids and alkalis to form salts. ZnO reacts with hydrochloric acid forming zinc chloride and water. With sodium hydroxide, it forms sodium zincate and water. [ii] The reason why non-metals do not displace hydrogen from dilute acids is because unlike metals, non-metals do not have a tendency to lose electrons but to gain electrons. ... Only those metals which are reactive than hydrogen will displace H2 from acids. [iii] Pure gold is very soft and it is not used for making jewellery. Copper or silver is added to pure gold to make it hard. Pure gold is called 24 carat gold. This is alloyed with silver or copper to make it hard. Generally 22 carat gold is called ornamental gold which is used for making ornaments. 22 carats gold contain 22 parts of pure gold and 2 parts of either copper or silver. B (i) Copper and Tin (ii) Iron and Chromium OR [a] When sulfide ore is heated in the presence of air, it converts sulfide ore into copper oxide, and it leaves SO2. Again when the copper oxide is heated, it gets reduced to copper. Finally, pure copper will be obtained by the electrolysis process. Heat 2CuS + 3O2 2Cu2O + 2SO2 Heat 2CU2O + 3O2 6CU + SO2 At Cathode: Cu2+ (aq) + 2e- Cu At Anode: Cu Cu2+ (aq) + 2e- [b] Refer Text Book Page No:52	1x3
10	[a]Ethanol [b] Lactic Acid [c] CO_2 and Water	1+1+1
11	Regeneration, Fragmentation and Budding	1+1+1
12	[A]Hydrogen is a cleaner fuel than CNG. This is due to the reason that it produces water on burning whereas CNG on burning produces CO_2, though much less than that produced when coal or oil is burnt. The increase in concentration of CO_2 in the atmosphere increases the greenhouse effect. [B]Any two reasons for replacing it with alternate sources of energy are: (i) Wood has low calorific value as compared to other sources of fuel. (ii) It causes air pollution on burning. (iii) Cutting down of trees causes depletion of forest leading to imbalance in nature.	1+1+1

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	(iv) Only 8-10 % energy of burning firewood is utilized and the remaining is wasted.	
13	[a] Students, Because lesser fuel is used . [b] Teachers prefer personal comfort and students show awareness about Environment [c] Use clean fuels like CNG	1x3
14	[A] Environmental pollution is the release of waste that causes detrimental effects on the environment. Environmental pollution is often divided into pollution of water, the atmosphere, and the soil. [B] Biodegradable Pollutants: i. They are decomposed and degraded by microbes ii. Degradation process is rapid. iii. They are not accumulated but are used up in short time. iv. They are used to produce energy manure, compost and biogas. v. They become part of biogeochemical cycles and give back rapid turn over Non-Biodegradable Pollutants: i. Cannot be decomposed by microbes. ii. Degradation process is slow. iii. They often accumulate. iv. They can be separated and recycled but the process is very expensive. v. Most of them never enter into Bio-geochemical cycles, very slow and toxic. [C] Problems caused by the non-biodegradable waste: (i) Non-biodegradable wastes cannot be made less toxic easily and hence they are major pollutants of the environment. (ii) Non-biodegradable waste can be passed along the food chain from crops to man and other animals and harm them. [D] Agricultural Waste	1.5+1.5
15	(a) Parallel combination. (b) Net resistance will be = $\frac{1}{10}+\frac{1}{15}=\frac{1}{R_p}$ => $R_p = 6\ \Omega$ Now V = IR (Ohm's Law) So current through 10 Ω resistor : 3 = I x 10 => I = 0.3 A So current through 10 Ω resistor : 3 = I x 15 => I = 0.2 A (c) V = IR So 3 = I x R_p I = 3/6 = 0.5 A	3

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16	a) The calcium compound used for disinfecting water is bleaching powder. Bleaching powder is represented as CaOCl2, though the actual composition is quite complex. Bleaching powder is produced by the action of chlorine on dry slaked lime [$Ca(OH)_2$]. $Ca(OH)_2 + Cl_2$ -----> $CaOCl_2 + H_2O$ b)Baking powder is a blend of acid (most commonly calcium acid phosphate, sodium aluminum sulfate or cream of tartar) and alkali (sodium bicarbonate is known commonly as baking soda).Baking powder. Baking powder is used for baking cakes. It contains sodium hydrogen carbonate, which breaks down when heated to form carbon dioxide gas. When mixed with water it releases CO_2 and Water. i) $2NaHCO_3$----Heat---→$Na_2CO_3+H_2O+CO_2$ ii) $NaHCO_3 + H_2O$ —-> $NaOH + H_2CO_3$ iii) H_2CO_3———→ $H_2O + CO_2$	1.5+1.5
17	[A]Refer Text Book Page No:106	3+2
	[B] i) Blood has three main functions: transport, protection and regulation. Blood transports the following substances: Gases, namely oxygen (O2) and carbon dioxide (CO2), between the lungs and rest of the body. Nutrients from the digestive tract and storage sites to the rest of the body. ii) Lymph helps to carry digested and absorbed fat from the Intestine and drains excess fluid from extra cellular space back into the blood. OR i) Refer to Text book Page No: 111 ii) Glucose that enters the nephron along with the filtrate after passing through the glomerulus, passes from the tubule of nephron where it is selectively reabsorbed and sent back to blood. The Bladder is the organ where Urine is stored.	
18	[A] STD's are Sexually Transmitted Diseases, Example: Syphilis, AIDS. [B] Many STDs are spread through contact with infected body fluids such as blood, vaginal fluids, or semen. They can also be spread through contact with infected skin or mucous membranes, such as sores in the mouth. You may be exposed to infected body fluids and skin through vaginal, anal or oral sex. [C] Condoms	2+2+1
19	[A] Brain and Spinal Cord [B] Spinal Cord, reflex action. [C] Taste Buds on Tongue, Olfactory receptors in the Nose	1.5+1.5 +2
20	(a) Refer Fig 12.3 on Page 204, NCERT Textbook. Slope represents resistance. (b)Only in case of area of cross section getting half, the resistance will change and becomes twice its original value. In case of V and I getting halved, no change in resistance is observed as according to Ohm's Law, V α I. Resistance is the proportionality constant and it depends only on length, area of cross section, nature of material and temperature only.	5

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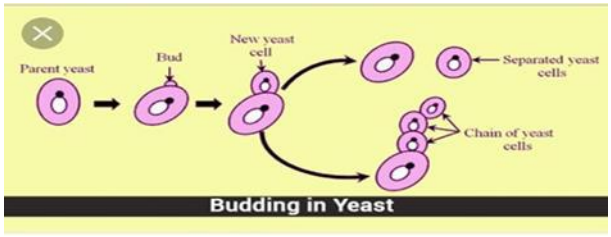
21	(a)Magnetic field lines are imaginary graphical representation for magnetic field present in a region. By using a compass. (b) Refer Fig. 13.4 on Page 225, NCERT Textbook. (c) Refer Page 225, NCERT Textbook.	5
	Section B	
22	In II beaker as Zinc is more reactive than copper and hence a displacement reaction occurs.	2
23	[A] A mixture of dyes that changes color gradually over a range of pH and is used (especially as indicator paper) in testing for acids and alkalis. [B] P neutral, Q Acidic, R Basic	2
24	Ammeter, battery, key, Rheostat and resistance is connected in series. (ANY TWO)	2
25	Least count = 0.5/20 = 0.025 V	2
26	(a) It will turn blue black. (b) To remove the chlorophyll.	2
27	Yeast reproduces by Budding as follows; The formation of a new organisms from the outgrowth on the parent body is called budding and the outgrowth is called bud. Yeast reproduces by this process. In yeast, a bud appears on the outer surface of the cell wall. The nucleus of the parent yeast divide into two parts in a way that one part is bud. Finally, the bud detaches itself from the parent yeast cell and develops into a daughter yeast cell. 	1+1
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