AES

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SUMMATIVE ASSESSMENT – I, 2015-16

SCIENCE

Class – X

Time Allowed : 3 hours **Maximum Marks : 90**

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 numbers 1 to 3 in **Section-A** are **one mark** questions. These are to be answered in **one word or in one sentence**
5. Question numbers **4 to 6 in Sections-A**are**two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **7 to 18 in Section-A** are **three marks** questions. These are to be answered in about 50 words each
7. Question numbers **19 to 24 in Section-A** are **five marks** questions. These are to be answered in about 70 words each.
8. Question numbers **25 to 33 in Section-B** are multiple choice questions based on practical skills. Each question is a **one mark** question. You are to select one most appropriate response out of the four provided to you.
9. Question numbers **34 to 36 in Section-B** are questions based on practical skills. Each question is of two marks.

SECTION-A

1 State the role of saliva in the digestion of food. 1

2 Calculate the number of electrons constituting one coulomb of charge. 1

(charge on 1 electron ~~1.6310^{-19} C~~) 1.62×10^{-19} C

3 Name the part of a biogas plant where reactions take place in the absence of oxygen. 1

4 A copper plate was dipped into a solution of silver nitrate. After sometime, a black layer was observed on the surface of copper plate. State the reason for it and write chemical equation of the reaction involved. 2

5 Two solutions A and B have pH values of 3.0 and 10.5 respectively. Which of these will turn 2

(i) Blue litmus solution to red and

(ii) Phenolphthalein from colourless to pink ? Justify your answer in each case.

6 Complete the following table : 2

	Name of the gland	Name of hormone	Function
(i)	Thyroid	----------	Regulates metabolism of fat, protein and carbohydrates
(ii)	----------	Insulin	Regulates blood sugar level
(iii)	pituitary	----------	----------

7 Identify the substance oxidised and the substance reduced in each of following reactions : 3

(i) $CuO + H_2 \rightarrow Cu + H_2O$

(ii) $ZnO + C \rightarrow Zn + CO$

(iii) $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

8 State the chemical property in each case on which the following uses of baking soda are based : 3

(i) as an antacid

(ii) as a constituent of baking powder

(iii) applied on a honey bee stung area

9 (a) In electrolytic refining of impure copper metal, which substances are used as cathode and anode ? 3

(b) Show the formation of $MgCl_2$ from magnesium and chlorine atoms by the transfer of electrons. (Atomic number of magnesium and chlorine are 12 and 17 respectively)

10 State one example each characterized by the following along with the chemical equation : 3

(i) Change in state.

(ii) Evolution of gas.

(iii) Change in temperature.

11 Define the term parasite. Name one plant parasite and one animal parasite. Some organisms break down the food material outside the body and then absorb it. Give two examples. 3

12 Draw a diagram of human brain and label, fore brain, hind brain and mid brain on it. 3

13 Define excretion. Write two vital functions of kidney. 3

14 Write symbols of the following circuit elements : 3

(i) Battery (ii) Ammeter (iii) Voltmeter

State the role of these elements in an electric circuit.

15 With the help of a diagram for experimental set up describe an activity to demonstrate that the magnetic field around a straight current carrying conductor decreases with increase in distance from the conductor. 3

16 A circuit has a fuse of rating 5 A. What is the maximum number of 40 Watts (200 V) bulbs that can be safely used in the circuit ? 3

17 Raman has read that burning of fossil fuels has many disadvantages. He is also aware of the fact that pollution caused by burning of fossil fuel can be reduced to some extent by using some techniques. Even then Raman always discourages the use of fossil fuels as a source of energy. 3

Answer the following questions :

(i) Why does Raman discourage the use of fossils fuel as a source of energy ?

(ii) Mention two techniques that can reduce the effect of harmful gases to the environment.

(iii) What quality of Raman is portrayed in his act ?

18 Explain the principle and process of converting ocean thermal energy into electricity. 3

19 (a) Explain two ways by which food industries prevent rancidity. 5

(b) Discuss the importance of decomposition reaction in metal industries with three points.

20 Draw a schematic diagram of the various steps involved in the extraction of metals from ores for metals of medium reactivity and for metals of low reactivity. 5

21 (a) Name one organ where growth hormone is synthesised in:(i) man (ii) plant. 5

(b) List the sequence of events that occur when a plant is exposed to unidirectional light, leading to bending of a growing shoot. Also name the hormone and the type of movement.

22 (a) Derive an expression for the resistance of a metallic wire in terms of resistivity. 5

(b) What will be the resistance of a metal wire of length 4 meters and area of cross section ~~$1.50310^{26}\ m^2$~~, if the resistivity of the metal be ~~$2.8310^{28}\ \Omega m$~~ ?

~~$1.50310^{26}\ m^2$~~ $1.503 \times 10^{26}\ m^2$

$2.83 \times 10^{28}\ \Omega m$

23 (a) Draw the magnetic field lines through and around a single loop of wire carrying electric current.

(b) State whether an alpha particle will experience any force in a magnetic field if (alpha particles are positively charged particles)

(i) it is placed in the field at rest. (ii)it moves in the magnetic field parallel to field lines.

(iii) it moves in the magnetic field perpendicular to field lines.

Justify your answer in each case.

24 (a) When the north pole of a magnet is moved towards a coil connected with a galvanometer, its pointer gets deflected to one side. Explain this observation with reason. Name the phenomenon.

(b) What will happen to the deflection in galvanometer when the magnet is taken away from the coil ?

(c) If the experiment is repeated with the magnet being moved towards the coil with great speed, state the change that you would notice in the deflection in the galvanometer ? Name and state the rule which helps in predicting the direction of deflection in each case.

SECTION - B

25 A student tested pH value of distilled water and found that the colour of pH paper changed to green. He checked the pH again after dissolving a pinch of solid sodium bicarbonate in it. Colour of pH paper changed to : 1

(a) yellow (b) red (c) green (d) blue

26 A solution turns blue litmus red. The nature of solution is : 1

(a) Neutral (b) Acidic (c) Basic (d) Strongly acidic

27 Four students I, II, III and IV studied the chemical reactions of dil HCl and NaOH with zinc and sodium carbonate (Na_2CO_3). They wrote the gas evolved if any in the boxes given, as shown below : 1

	HCl	NaOH
Zn	H_2	No reaction
Na_2CO_3	No reaction	CO_2

(I)

(II)

	HCl	NaOH
Zn	H_2	H_2
Na_2CO_3	No reaction	CO_2

(III)

	HCl	NaOH
Zn	No reaction	H_2
Na_2CO_3	CO_2	No reaction

(IV)

	HCl	NaoH
Zn	H_2	H_2
Na_2CO_3	CO_2	No reaction

The right set of observation is that of student :

(a) I (b) II (c) III (d) IV

28 On adding Zn rod to the pale green coloured solution of $FeSO_4$, the solution turns : 1

(a) Colourless (b) Blue (c) Dark green (d) Yellow

29 Anindita took three metals labelled X, Y and Z. She carried out displacement reactions with their salt solutions. She observed that : 1

$X + YA \rightarrow XA + Y$

$Z + XA \rightarrow ZA + X$

The correct conclusion is :

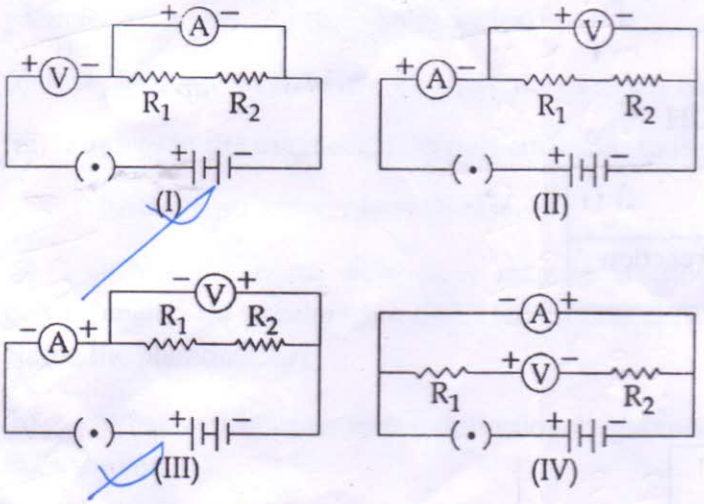
(a) Z is more reactive than Y and Y is more reactive than X

(b) Z is more reactive than X, and X is more reactive than Y

(c) Y is more reactive than X, and X is more reactive than Z

(D) X is more reactive than Z, and Z is more reactive than Y

30 In an experiment determine the equivalent resistance of two resistors connected in series, in which circuit the connection of voltmeter is correct ? 1



(a) I (b) II (c) III (d) IV

31 Two unequal resistances are connected in parallel by a student. Which of the following is true ? 1

(a) Current is same is both
(b) Current is larger in higher resistance
(c) Voltage-drop is same across both
(d) Voltage drop is lower in lower resistance.

32 A portion of destarched leaf of a potted plant was covered with a black strip of paper. The plant was exposed to sunlight for six hours and then tested for starch. It was observed that : 1

(a) Both covered and uncovered parts turned blue black

(b) Both covered and uncovered parts turned yellowish brown

(c) Only the uncovered part turned blue black

(d) Only the covered part turned blue black

33 The use of water in the beaker in the experimental set-up to show that 'CO_2 is given out during respiration' is to: 1

(a) Provide moisture to the germinating seeds

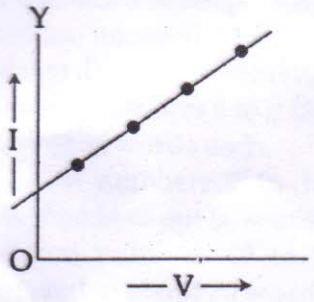
(b) Absorb carbon dioxide

(c) Create a partial vacuum

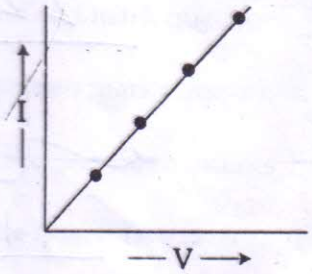
(d) Note the change in its level in the delivery tube immersed in it when partial vacuum is created in the conical flask.

34 A student added water to quick lime kept in a beaker. State the conclusions he would draw, about the chemical reaction that takes place, on the basis of his observation. 2

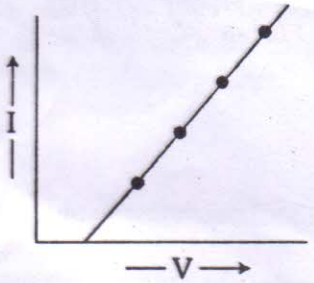
35 To show dependence of potential differnce (V) on current (I) across a resistor, three students drew graphs between V and I based on their readings. 2



(I)



(II)



(III)

(i) Which student drew correct graph ?

(ii) From the values of V, I and R which physical quentity can be calculated by graph.

36 Shyama and Rehana prepared temporary mounts of leaf peel separately. Shyama obtained a clear slide whereas Rehana observed irregular patches when observed under a microscope. What could be the possible anomaly in Rehana's slide preparation and how it can be eliminated ? 2

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