

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

Name the process used by single-celled organisms for taking in food, exchange of gases or removal of wastes. 1

2

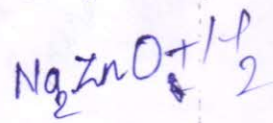
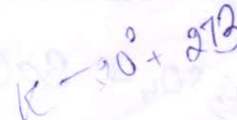
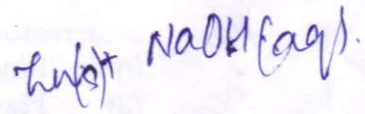
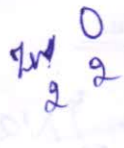
A compass needle shows deflection when brought near a current carrying conductor. Why? 1

3

Mention the minimum temperature difference required between surface water and the water at depths of up to 2 km in an ocean thermal energy plant. 1

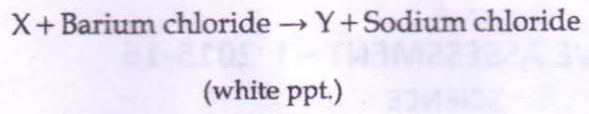
4

State what happens when zinc granules are heated with sodium hydroxide solution. Write the balanced chemical equation for this reaction. Name the main product formed in this reaction. 2





5 Consider the following chemical reaction :



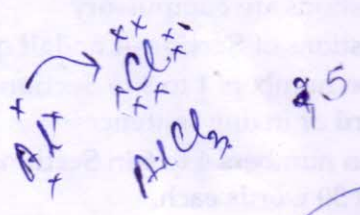
Identify : (a) X and Y ; (b) The type of reaction.

6 What is synapse ? How does a message of an impulse transmit through a synapse ?

7 Identify the type of each of the following reactions. Also write balanced chemical equation for each.

(a) The reaction mixture becomes warm.

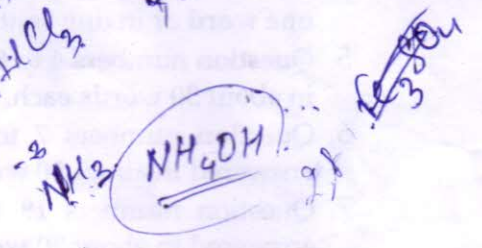
(b) An insoluble substance is formed.



8 (a) What is the action of litmus on :

(i) dry ammonia gas

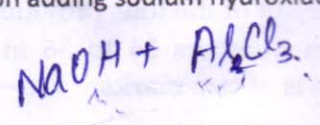
(ii) solution of ammonia gas in water



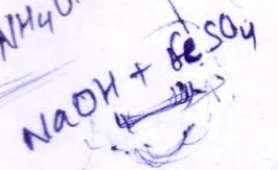
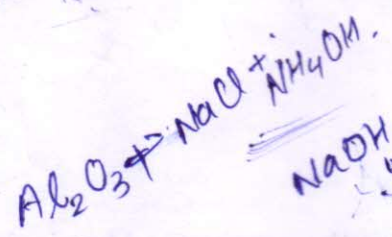
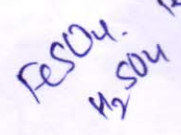
(b) State the observations you would make on adding sodium hydroxide to aqueous solution of :

(i) ferrous sulphate

(ii) aluminium chloride.



Give balanced chemical equations.

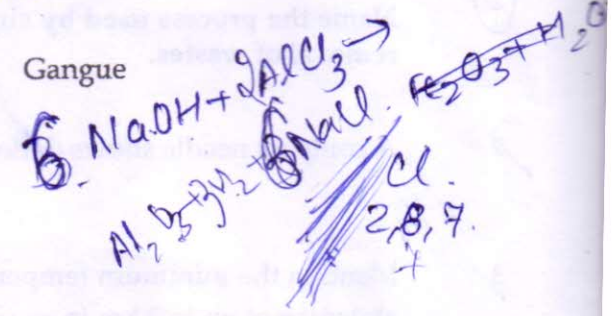


9 Explain the following terms :

(a) Ore

(b) Mineral

(c) Gangue

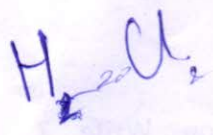


10 Give reason for the following :

(a) Sodium is kept immersed in kerosene oil.

(b) Iron, the most widely used metal, is never used in its pure state

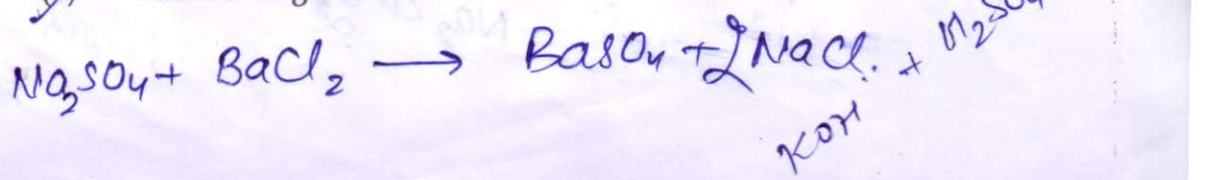
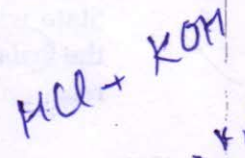
(c) Hydrogen is not evolved when a metal reacts with nitric acid (except Mn and Mg)



11 (a) State reason for the following :

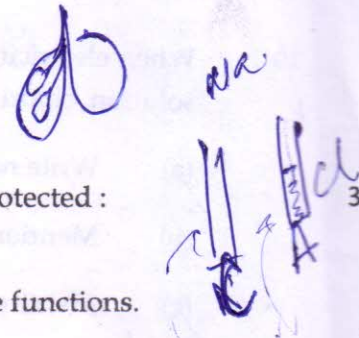
(i) Rings of cartilage are present in the trachea.

(ii) Plants look green in colour.





(b) Write other names of the following :  
(i) alveolar sac (ii) voice box



12 (a) Name the bony structure in which the following organs are protected :  
(i) Brain (ii) Spinal cord

(b) Mention the main thinking part of the brain and write its three functions.

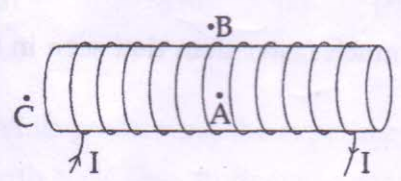
13 Define the terms phototropism and geotropism. State any four roles of plant hormones. 3

14 Calculate the cost of operating an electric heater for 2 h if it takes 5 A current on a supply of 220 V, 1 kWh energy costs Rs. 6.0. 3

$E = P \times T$   
 $P = V \times I$

15 It is necessary to connect an earth wire to electric appliances having metallic covers. Why? 3  
How will you identify earth wire in household circuit?

16 For the current carrying solenoid as shown below, draw magnetic field lines and giving 3 reason explain that out of the three points A, B and C at which point the field strength is maximum and at which point it is minimum.



red black

Bronchi

17 Ankita visited a village and saw that cow dung cakes are still being used as fuel there. She 3 decided to educate the villagers to create awareness among them about the other sources of energy. Villagers were very happy to know about the alternative sources of energy. Now answer the following questions :

22.9  
26.1  
11.00

- (i) Why is the burning of cow dung cake not advisable?
- (ii) Name two other sources of energy suggested by Ankita to the villagers.
- (iii) What qualities of Ankita are reflected in her actions?

18 Energy can neither be created nor be destroyed. In the context of the statement explain, why 3 do we talk about energy crisis?

22.9  
26.1  
13.8

2W  
27.9

NaOH  
Caustic



19 ✓ When electricity is passed through an aqueous solution of a substance 'X' sodium hydroxide solution, chlorine gas and hydrogen gas are formed.

- (a) Write name and chemical formula of substance 'X'. *NaOH + H<sub>2</sub>O → H<sub>2</sub> + Cl<sub>2</sub>*
- (b) Mention the name of this process and justify this name. *Electrolysis*
- (c) Identify the gases liberated at anode and at cathode. Write one use of each gas.
- (d) List two important uses of NaOH obtained in the process. *NaOH + H<sub>2</sub>O*

20 ✓ (a) The blue colour of crystals of a substance changed on heating in a closed test tube but the colour was regained after sometime on cooling. Name the substance and write its chemical formula. Explain the phenomenon involved.

(b) Write name and chemical formula of two such compounds whose one formula unit is associated with 10 and 2 water molecules respectively. *Na<sub>2</sub>CO<sub>3</sub> · 10H<sub>2</sub>O*

21 ✓ (a) State reason for the following :

- (i) Herbivores need a longer small intestine while carnivores have shorter small intestine.
- (ii) The lungs are designed in human beings to maximise the area for exchange of gases.

(b) The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms.

22 ✓ (a) Define electric potential difference between two points. 5

(b) Is electric potential difference a scalar or vector quantity? What do you mean by a potential difference of 1 volt?

23 ✓ Describe with the help of a labelled diagram an activity to demonstrate the force acting on a current-carrying conductor due to a magnetic field. Also show the effect of change in direction of magnetic field and change in direction of current. State the rule to find the direction of force based on the conclusion of this activity. 5

For the series combination of three resistors establish the relation :

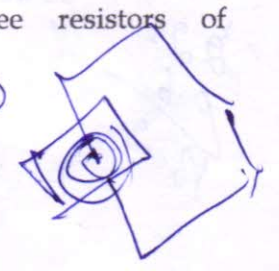
24 ✓  $R = R_1 + R_2 + R_3$

where the symbols have their usual meanings.

Calculate the equivalent resistance of the combination of three resistors of 6 Ω, 9 Ω and 18 Ω joined in parallel.

*6, 9, 18*

*Cathode*



*2V = 1W / 10*





SECTION - B

~~NaOH~~

25 Shruti placed a drop of solution 'A' on a strip of pH paper and a deep blue colour was produced. The solution 'A' is of : 1

- (a) dil NaOH solution (b) dil hydrochloric acid  
(c) water (d) dil ethanoic acid

26 During the performance of an experiment to test the pH of given samples by using pH paper four students I, II, III and IV recorded the following observations : 1

Student	Sample taken	pH paper turns to
I	Dil hydrochloric acid	Yellow
II	Water	Green
III	Dil sodium bicarbonate solution	Light blue
IV	Dilsodium hydroxide solution	Violet

NaHCO<sub>3</sub>  
+ H<sup>+</sup>

Which one of the above observations is incorrect ?

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

27 While performing the experiment to 'Study the properties of HCl and NaOH by their reaction with Na<sub>2</sub>CO<sub>3</sub> a student can confirm whether hydrogen or carbon dioxide is liberated, by : 1

- (a) their colour (b) their odour  
(c) lime water test (d) pH paper

P.S.C. - 20  
M.A. - AL  
+ AL - RE  
+ GE

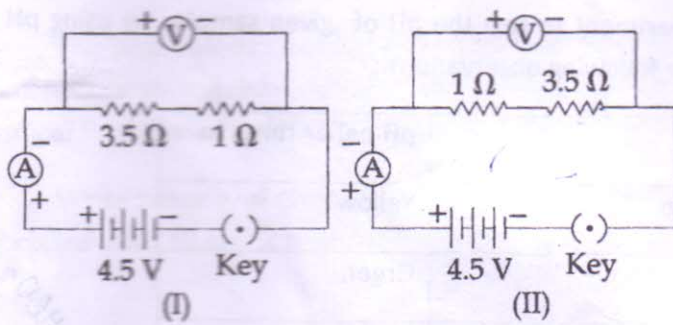
28 Tanisha put iron filing in different test tubes containing ZnSO<sub>4</sub>, Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, FeSO<sub>4</sub> and CuSO<sub>4</sub>. The one in which she observes a change in colour will be the one which contains : 1

- (a) Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> (b) FeSO<sub>4</sub> (c) ZnSO<sub>4</sub> (d) CuSO<sub>4</sub>

29 Disha took two iron nails and put them in aluminium sulphate solution. After sometimes she observed that : 1

- (a) the solution becomes warm
- (b) grey-metal is deposited on the iron nail
- (c) the colourless solution changes to light green
- (d) solution remains colourless and no deposition is observed on the iron nail.

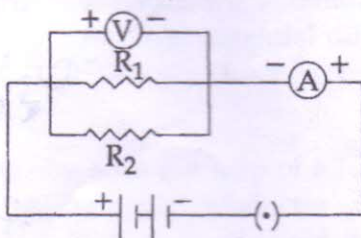
30 To determine the equivalent resistance of two resistors connected in series, a student prepared two electric circuits, correct reading of ammeter in the circuits is :



*Handwritten calculations:*  
 $3.5 + 1 = 4.5 \Omega$   
 $V = IR$   
 $4.5 = I \times 4.5$   
 $I = 1 \text{ A}$

- (a) In circuit I, 1.0 A and in II, 0.1 A
- (b) In both circuits I and II, 1.0 A
- (c) In circuit I, 0.1 A and in II, 1.0 A
- (d) In both circuits I and II, 0.1 A

31 To calculate the equivalent resistance when  $R_1$  and  $R_2$  are connected in parallel, a student is not able to perform the experiment for given circuit diagram.



The correct reason is :

- (a) Position of Voltmeter is not correct.
- (b) Position of Ammeter is not correct.
- (c) Terminals of Voltmeter are not connected correctly.
- (d) Terminals of Ammeter are not connected correctly.



In an experiment on photosynthesis, students were instructed to cover a portion of a leaf of a de-starched potted plant with an opaque paper.

"A" covered one of the leaves with red strip, "B" with green, "C" with blue and "D" with black. When the starch test was done on the leaves after 4 hours, the result showed no starch in:

- (a) The portion covered with red, green and blue strips
- (b) The portion covered with green strip
- (c) The portion covered with black and blue strips
- (d) Any of the covered portions.

33 In the experiment to show that  $\text{CO}_2$  is released during respiration', the solution in the test tube is chemically :

- (a) NaOH
- (b) KOH
- (c) NaCl
- (d) KCl

34 Write two precautions that must be taken while studying the decomposition reaction, when the ferrous sulphate crystals are heated in a boiling tube.

35 Draw a diagram of a circuit showing a resistor and a voltmeter connected in parallel.

36 Explain why leaf is preferred for the preparation of temporary mount to show stomata. State two functions of stomata.

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