

SUMMATIVE ASSESSMENT – I, 2016-17

SCIENCE

Class – X

Time Allowed : 3 hours

Maximum Marks : 90

General Instructions :

- The question paper comprises of two Sections, A and B. You are to attempt both the sections.
- All questions are compulsory
- All questions of Section-A and all questions of Section-B are to be attempted separately.
- Question numbers 1 to 3 in Section-A are one mark questions. These are to be answered in one word or in one sentence
- Question numbers 4 to 6 in Sections-A are two marks questions. These are to be answered in about 30 words each.
- Question numbers 7 to 18 in Section-A are three marks questions. These are to be answered in about 50 words each
- Question numbers 19 to 24 in Section-A are five marks questions. These are to be answered in about 70 words each.
- 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.
- Question numbers 34 to 36 in Section-B are questions based on practical skills. Each question is of two marks.

SECTION-A

$$R = \frac{V}{I}$$

$$H = I^2 R t$$
$$= I^2 \times \frac{V}{I} \times t = VI t$$

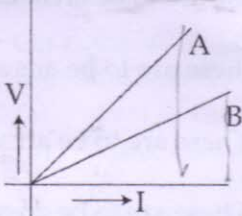
- B 1 ✓ Why is it advised to use iodised salt in our diet ? 1
- P 2 ✓ Write relation between heat energy produced in a conductor when a potential difference V is applied across its terminals and a current I flows through it for time t. 1
- B 3 ✓ What is meant by the term 'Biomass' ? 1
- C 4 ✓ Define an acid and a base. Name one weak acid and one strong base. 2
- C 5 ✓ Differentiate between roasting and calcination processes by giving one example of each. 2
- B 6 ✓ What are enzymes ? Name any one enzyme of our digestive system and write its function. 2
- C 7 ✓ When we overeat we feel burning sensation in the stomach. State reason. Which substance can be used to nullify its effect? Give one example, state the property due to which we feel relief. 3
- C 8 ✓ State the types of chemical reactions represented by the following equations : 3
- $A + BC \rightarrow AC + B$
 - $A + B \rightarrow C$
 - $X \rightarrow Y + Z$
 - $PQ + RS \rightarrow PS + RQ$
 - $A_2O_3 + 2B \rightarrow B_2O_3 + 2A$
 - $P + Q \rightarrow R$
- C 9 ✓ (a) What is an alloy and how is it prepared give two examples of alloys. 3
- (b) Iron is not used in its pure state. Give reason. 0.05 + 0.05 = 0.1
- C 10 ✓ Write chemical equations for the reactions taking place when : 3
- magnesium reacts with dilute HNO_3 .
 - Sodium reacts with water.

- (iii) Zinc reacts with dilute hydrochloric acid.
- (a) Name the organs where receptors are usually located. 3
- (b) State the functions of :
 (i) gustatory receptors
 (ii) olfactory receptors
- (c) Identify the parts of a neuron
 (i) Where information is acquired
 (ii) Through which information travels

The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms. 3
 Give reason. State the pathway of air from nostrils to the lungs in human beings.

Write three points of difference between photosynthesis and respiration. 3

V - I graphs for two conductors A and B are shown in the figure. Both of them are connected in parallel to a battery. Which of the two will produce more heat per unit time? Give justification for your answer. 3



Handwritten notes and equations:

- $I = \frac{V}{R} \quad V \left(\frac{1}{2} \right)$
- $\text{slope} \propto \frac{1}{R} \rightarrow I - V$
- $\text{slope} \propto R \rightarrow V - I$
- $R = \frac{V}{I}$
- $\frac{1}{R} = \frac{I}{V}$
- $I \propto \frac{1}{R}$

A uniform magnetic field is directed vertically upwards. In which direction in this field should an α - particle (which are positively charged particles) be projected so that it is deflected south ward? Name and state the rule you have used to find the direction in this case. 3

A circuit has a line of 5 A. How many lamps of rating 40 W; 220 V can simultaneously run on this line safely? 3

Kritika observed that the tube lights in the corridor of her school were always switched on the whole day. She brought the matter to the notice of her class teacher who talked to the Principal about it. The Principal took immediate action. 3

- (i) Kritika helped in a way to reduce air pollution. Explain. how?
 (ii) Kritika was appreciated by the teachers and the principal for portraying which values ?
 (iii) How can the consumption of electricity be reduced in a school ?

Define nuclear fission. Write the steps involved in generating electricity in a nuclear reactor. 3

Define rancidity. What kind of substances are used to prevent rancidity ? Explain any three methods to prevent rancidity. 5

(a) Fill in the blanks in the following table : 5

Name of salt	Formula	Salt obtained from	
		Base	Acid
1. Sodium Chloride	NaCl	-	HCl
2. Potassium Nitrate	-	KOH	HNO ₃
3. Aluminium Chloride	AlCl ₃	-	HCl
4. Zinc Sulphate	ZnSO ₄	-	H ₂ SO ₄
5. Copper Sulphate	CuSO ₄	Cu(OH) ₂	-
6. Sodium Acetate	-	NaOH	CH ₃ COOH

(b) Identify the acidic and basic salts from the following :
 CaSO₄, NH₄Cl, K₂CO₃, MgCl₂

parallel -

$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

29, C
30
31

B 21 With the help of suitable examples explain the terms phototropism geotropism and chemotropism. 5

P 22 Give reason for the following : 5

- (i) An electric bulb is not filled with air but is filled with argon or nitrogen.
- (ii) The filament type electric bulbs are not power efficient.
- (iii) The coils of heating devices are made of alloys rather than pure metals.
- (iv) Copper and aluminium wires are usually used for electricity transmission.
- (v) The current that makes the heater element red hot only slightly warms the connecting wire leading to the heater.

P 23 What are magnetic field lines ? List three characteristics of these lines. Describe in brief an activity to study the magnetic field lines due to a current carrying circular coil. 5

P 24 What is meant by the term magnetic field ? Draw the pattern of magnetic field lines due to a current carrying solenoid. How can the strength of this magnetic field be increased ? Explain. List two properties of magnetic field lines. 5

SECTION - B

C 25 A student was provided with four sample solutions in test tubes A, B, C and D with known pH 4, 7, 10 and 14 respectively. The teacher asked him to observe the colour of each sample solution by using pH paper. He recorded his observations as follows :

Sample solution	colour change on pH paper
A 4 acidic	Orange
B 7 neutral	Green
C 10 basic	Yellow
D 14 basic	Deep blue

Which one of the above observations is incorrect ?

- (a) (A) (b) (B) (c) (C) (d) (D)

C 26 Which of the following would turn red litmus into blue ? 1

(i) NaOH Solution (ii) CH₃COOH Solution

(iii) lemon juice (iv) NaHCO₃ Solution

- (a) i, iv (b) ii, iv (c) i, iii (d) iii, iv

C 27 A student added hydrochloric acid to sodium carbonate. He would observe that a gas is liberated which : 1

- (a) is colourless
- (b) turns moist blue litmus red
- (c) turns lime water milky
- (d) shows all the above properties

C 28 $2Al + 3CuSO_4 \rightarrow 3Cu + Al_2(SO_4)_3$ 1

The type of reaction shown above and the change of colour of reaction solution to products that was observed is -

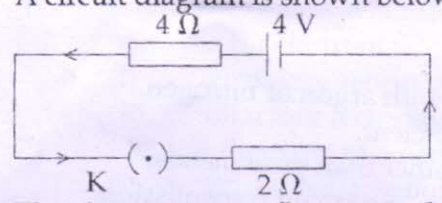
- (a) Combination reaction, blue to green
- (b) Displacement reaction, blue to colourless
- (c) Decomposition reaction blue to green
- (d) Displacement reaction, blue to green.

C 29 A few small pieces of aluminium metal were added to ferrous sulphate solution. It was observed that : 1

- (a) Pale green colour of solution disappears, and it becomes colourless.
- (b) Pale green colour of solution persists.
- (c) Pale green colour of solution turns blue.
- (d) Pale green colour of solution turns red.

D
S
C
S
D

P 30 A circuit diagram is shown below.



The electric current flowing in the circuit will be :

- (a) $\frac{2}{3}$ A (b) $\frac{3}{2}$ A (c) 1 A (d) 6 A

P 31 Ramesh connected three equal resistances in parallel and set up circuit to find equivalent resistance of the combination. He measured current in the ammeter to be 3A. The current flowing through each resistance would be :

- (a) 1A (b) 3A (c) $\frac{1}{3}$ (d) $\frac{2}{3}$

B 32 On completion of the experiment to demonstrate that "light is necessary for photosynthesis", four students reported the inference as follows. Identify the correct inference.

- (a) Part of the leaf covered with strip can only undergo photosynthesis
- (b) Uncovered parts of the leaf cannot synthesize starch
- (c) Photosynthesis takes place only in the presence of sunlight
- (d) Light is necessary for synthesis of starch in green plants

B 33 In the experimental to show that 'CO₂ is given out during respiration,' the seeds that are taken are germinating seeds because :

- (a) germinating seeds show photosynthesis
- (b) germinating seeds are big and softer than dry seeds
- (c) germinating seeds respire and release O₂
- (d) germinating seeds respire and release CO₂

C 34 The following chemicals are available in a laboratory : DP
Copper sulphate, solution Ferrous sulphate, crystals Barium chloride, Sodium sulphate, Quick lime.

Select appropriate chemicals from above to perform the experiment to study the following reactions :

- (i) Combination (ii) Decomposition
- (iii) Displacement (iv) Double Displacement

P 35 To study the dependence of potential difference (V) on electric current (I) through a resistor is shown as below :

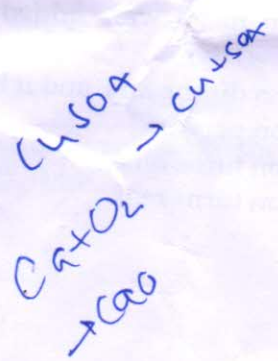
Potential difference (V) in volt :	2.5	5.0	10	15.0	20
Electric current (I) (in Ampere)	0.4	0.8	1.2	1.6	2.0

- (i) Plot the graph between V and I to calculate the resistance of a resistor.
- (ii) Name the law which is illustrated by the above graph.

B 36 What precautions should be taken while peeling the leaf to get a peel to show stomata ?

-o0o0o0o-

P
S
C
M
A
D
Z
I
H
C



$V = IR$

$V = 3 \times 3$