Radiance Academy

Std: 10th | Sub: Science and Technology -1 | Marks: 40

Date : | Time : 2Hr

Instructions :

1. It is necessary to solve all the questions.
2. Draw neat and labelled diagrams wherever necessary.
3. Start every new main question on separate page.
4. Figures on the right indicate marks.
5. For each Multiple Choice Question (1.B), ONLY first answer will be considered.
6. Write answer of each MCQ with option number. Eg. i) a……. ii) c……..

Q. 1 A) Choose the correct alternative an write the alphabet corresponding to the correct answer. 5

i) Eka-boron was subsequently known as_____.
a) gallium b) germanium c) scandium d) molybdenum

ii) Water expands on its temperature below _____^{0}c.
a) 0 b) 4 c) 8 d) 12

iii) _____light is deviated the maximum in the spectrum of white light in obtained with glass prism.
a) Red b) Yellow c) Violet d) Blue

iv) The image obtained while finding the focal length of convex lens is _____.
a) real and erect c) virtual and erect
b) real and inverted d) virtual and erect

v) The property of direct bonding between atoms of the same element to form a chain is called _____.
a) catenation b) isomerism c) dehydration d) polymerization

Q. 1 B Solve the following questions. 5

i. State whether the following statement is true or false.
If the height of the orbit of a satellite increases, its velocity must also increase.

ii. Match the following.

Column I	*Column II*
1. Ethyne	a. C_2H_6
2. Ethene	b. C_2H_2
	c. C_2H_4

iii. By observing the correlation in the first pair, complete the second pair.
Pressure cooker : Anodizing :: Silver plated spoons : _____

iv. Find the odd one out.
Fuse wire, Bad conductor, Rubber gloves, Generator.

v. Write the name and symbol of the following element.
The noble gas with the smallest atomic nucleus.

Q 2. A Give scientific reasons. (Any Two) 4

1. The coils in heating devices such as a toaster and electric iron are made of an alloy such as Nichrome, rather than a pure metal.
2. It is recommended to use air tight container for storing oil for long time.
3. While shooting a fish in a lake, the gun is aimed below the apparent position of the fish.

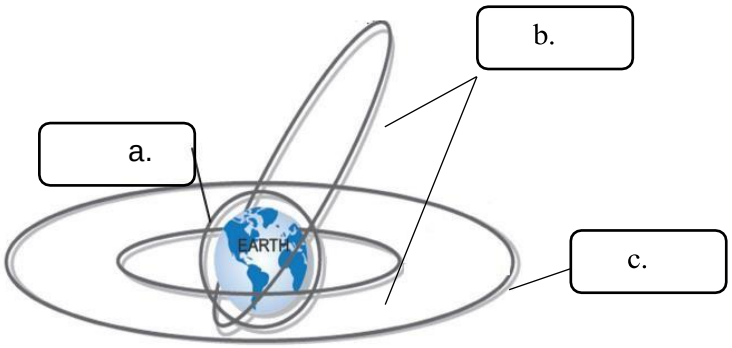
Q 2 B Answer the following. (Any Three) **6**

1. Distinguish between:
   Mendeleev`s periodic table & Modern periodic table
2. Explain the following reactions with balanced chemical equation.
   Ethanoic acid is treated with sodium carbonate.
3. A bulb of 40 W is connected across a source of 220 V. Find the resistance of the bulb.
4. Explain the principle of heat exchange.
5. Write short note on alloying.

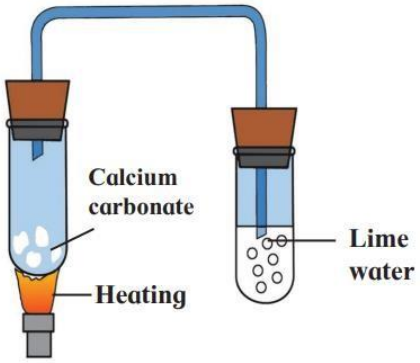
Q.3 Answer the following. (Any five) **15**

1. Considering the elements of period 3 in the modern periodic table, answer the following questions.
   a. Name the element in which all the shells are completely filled with electrons.
   b. Name the element which has one electron in the outermost shell.
   c. State the most electronegative element in this period.

2. Write the proper name of the orbits of satellites shown in the following figure with their height from the Earth`s surface.



3. Study the following figure and answer below questions.
   a. After heating calcium carbonate which gas is formed in a test tube?
   b. When this gas pass through lime water what change takes place?
   c. Write the balance chemical equation from the given diagram?



4. Write the IUPAC names of the following structural formulae.

   a) CH_3- CH_2- CH_2-CH_3

   b) CH_3- CH_2-COOH

   c) CH_3 –CO- CH_2- CH_3

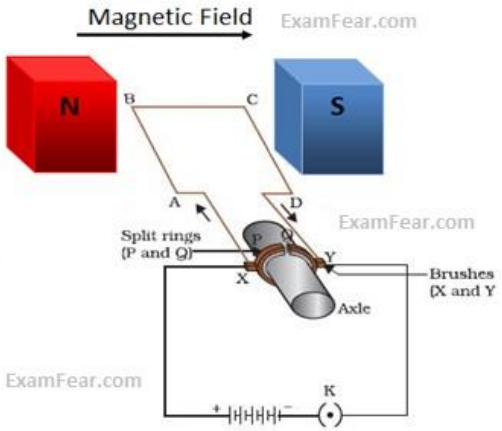
5. Identify the process given in following passage and draw neat labelled diagram showing the process.
Electrolysis of molten mixture of alumina (melting point > 2000^0C) is done in steel tank. The tank has a graphite lining on the inner side. This lining does the work of a cathode. A set of graphite rods dipped in the molten electrolyte works as anode. Cryolite (Na_3AlF_6) and fluorspar (CaF_2) are added in the mixture to lower its melting point upto 1000^0C

6. What is meant by space debris? Why is there need to manage the debris?

7. A convex lens forms a real and inverted image of a pencil at a distance of 40 cm from the lens. The Image formed is of the same size as the object. Find the focal length and power of the lens. At what distance is the pencil placed from the lens?

Q. 4 Answer the following. (any one) **5**

1. With a neat labelled diagram, explain twinkling of a star. Also explain why a planet does not twinkle.
2.



a) Construction of which equipment does the following diagram show?
b) On which principle does this equipment work?
c) According to which law does the coil ABCD rotate? Write that law?
d) Explain construction of given equipment?
e) Where is this equipment used?
