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**Max Time : 3 hr** **Class : 10th Science Max Marks : 80**

**Full Syllabus Test**

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| **General Instructions** : Read the following instructions carefully.   1. The question paper comprises 5 sections A, B, C , D and E. There are 39 questions in the question paper. All questions are compulsory. 2. **Section – A** : Consists of 20 objective type questions carrying one mark each. 3. **Section – B :** Consists of 6 very short questions carrying 2 marks each. Answer to these questions should in the range of 30 to 50 words. 4. **Section – C :** Consists of 7 short questions carrying 3 marks each. Answer to these questions should in the range of 50 to 80 words. 5. **Section – D :** Consists of 3 long questions carrying 5 marks each. Answer to these questions should in the range of 80 to 120 words. 6. **Section – E :** Consists of 3 source-based/case-based units of assessment of 4 marks each with sub-parts. |

**Section – A**

1. The chemical formula of rust is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) FeO.Fe2O3 | b) Fe2O3.xH2O | c) FeO.xH2O | d) None of these |

1. Oral contraceptives prevent :

|  |  |
| --- | --- |
| a) Fertilization | b) Ovulation |
| c) entrance of sperms in vagina | d) all of these |

1. The magnetic field produced due to a circular wire at its centre is :

|  |  |
| --- | --- |
| a) at 45 to the plane of the wire | b) at 60 to the plane of the wire |
| c) in the plane of the wire | d) perpendicular to the plane of the wire |

1. Which of the following molecules has all its atoms joined together by double covalent bonds?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Methane | b) water | c) carbon dioxide | d) Nitrogen trichloride |

1. Which of the following have same functions?

|  |  |
| --- | --- |
| a) stomata and veins | b) stomata and lenticels |
| c) lenticels and parenchyma | d) Hydathodes and sieve tubes |

1. If a copper rod carries a direct current, the magnetic field associated with the current will be:

|  |  |
| --- | --- |
| a) only inside the rod | b) only outside the rod |
| c) both inside and outside the rod | d) neither inside nor outside the rod |

1. An object is at a distance of 10 cm from a mirror and the image of the object is at a distance of 30 cm from the mirror on the same side as the object. Then the nature of the mirror and its focal length is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Convex , 15 cm | b) concave , 1.5 cm | c) convex , 7.5 cm | d) concave , 7.5 cm |

1. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?

(i) good thermal conductivity (ii) Good electrical conductivity (iii) ductility (iv) high melting point

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) & (ii) | b) (i) & (iii) | c) (ii) & (iii) | d) (i) & (iv) |

1. Identify the unsaturated compounds form the following :

(i) Propane (ii) propene (iii) propyne (iv) Chloropropane

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) & (ii) | b) (ii) & (iv) | c) (iii) & (iv) | d) (ii) & (iii) |

1. Which of the following `processes involve chemical reaction?

|  |  |
| --- | --- |
| a) Filling packets or chips with nitrogen | b) Sublimation or dry ice |
| c) Electrolysis or water | d) None of the above |

1. Which covalent molecule contains the structure where the central atom is bonded to four other atoms by covalent bonds?

(i) Diamond (ii) Graphite (iii) Methane (iv) Silicon dioxide

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

1. pH of different solutions are given in the table:

|  |  |
| --- | --- |
| Solution | pH |
| P | 2.2 – 2.4 |
| Q | 13.8 – 14.0 |
| R | 6.5 – 7.5 |
| S | 8.0 – 9.0 |

Arrange these solutions in the increasing order of OH – ion concentration.

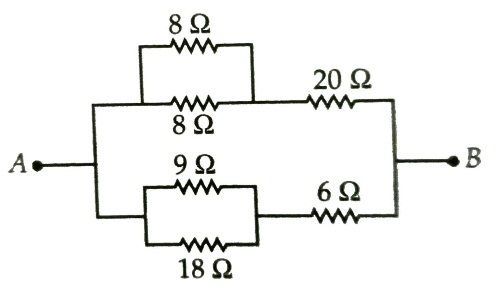
|  |  |  |  |
| --- | --- | --- | --- |
| a) S < R < Q < P | b) P < R < S < Q | c) R < S < Q < P | d) Q < S < R < P |

1. Which of the following phenomenon occur, when a small amount of acid is added to water?

(i) Ionization (ii) Neutralization (iii) Dilution (iv) salt formation

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) & (ii) | b) (i) & (iii) | c) (ii) & (iii) | d) (ii) & (iv) |

1. The equivalent resistance between the points A and B as shown in the figure :



|  |  |  |  |
| --- | --- | --- | --- |
| a) 6 | b) 8 | c) 16 | d) 24 |

1. Potential difference between a live wire and the neutral wire in domestic electric circuits is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 200 V | b) 220 V | c) 150 V | d) 210 V |

1. Identify the correct food chain :

|  |  |
| --- | --- |
| a) Grass Frog Insect Snake | b) Grass Insect Frog Snake |
| c) Insect Frog Grass Snake | d) Grass Frog Snake Insect |

1. **Assertion:** Higher the H+ ion concentration, lower is the pH value.

**Reason:** The pH of a neutral solution is 7. Value less than 7 represents a basic solution. Value more than 7 represents an acidic solution.

1. **Assertion:** when pea plants (pureline) having round yellow seeds are crossed with pureline plants having wrinkled green seeds, then all pea plants obtained in F1 generation bear wrinkled green seeds.

**Reason:** Round and yellow seeds are dominant to wrinkled and green seeds.

1. **Assertion:** Mendel successfully postulated laws of heredity.

**Reason:** Mendel recorded and analysed results of breeding experiments quantitatively.

1. **Assertion:** gaseous exchange continues in the lungs without interruption even during expiration.

**Reason:** Residual volume of air can never be driven out by respiration.

**Section – B**

1. Write one point of difference between a hydrated salt and non-anhydrous salt.
2. State with reason any two possible consequences of elimination of decomposers from the earth.
3. It is possible that a trait is inherited but not expressed in an organism. Explain on the basis of Mendel experiment.
4. The molecular formulae of alkenes X and Y are CXH8 and C10HY respectively. What are the relative molecular masses of X and Y?
5. What is ozone? How it is formed in the upper layers of the earth’s atmosphere? How does ozone affect our ecosystem?
6. List the seven pairs of contrasting characters of experimental plant studied by Mendel.

**Section – C**

1. Given the PH value of 4 different liquids as : 7 , 14 , 2.

(a) Which of these could be that of (i) lemon juice (ii) distilled water (iii) 1 M sodium hydroxide solution?

(b) What is the action of litmus on : (i) dry ammonia gas (ii) solution of ammonia gas in water?

1. Sex determination is the method by which distinction between males and females is established in a species. The sex of an individual is determined by specific chromosomes. These chromosomes are called sex chromosomes or allosomes. X and Y are called sex chromosomes. The normal chromosomes other than the sex chromosomes of an individuals are known as autosomes.

(a) Human females have homomorphic sex chromosomes while males have heteromorphic. Explain.

(b) How is the sex of the baby determined? Explain with a cross only.

1. (a) The magnification produced by a plane mirror is +1. What does that mean?

(b) What is colour blindness? What kind of retinal cells are lacking in person suffering from this defect?

1. (a) With the help of a chemical equation, explain how a soda-acid fire extinguisher helps in putting out a fire.

(b) A compound which is prepared from gypsum has the property of hardening when mixed with a proper quantity of water. Identify the compound. Write the chemical equation for its preparation. For what purpose is it used in hospitals?

1. Explain the formation of : (i) Acidic (ii) basic (iii) Neutral salts.
2. Explain the given reactions with examples :

(i) Combustion reaction (ii) Oxidation reaction (iii) Substitutional reaction

1. What is homologous series of carbon compounds? List its any two characteristics. Write the name and formula of next higher homologous of HCOOH.

**Section – D**

1. A series of organic compounds having same functional group, with similar or almost identical chemical characteristics in which all the members can be represented by the same general formula and the two consecutive members of the series differ by – CH2 group or 14 mass unit in their molecular formulae is called homologous series. For example, all the members of alcohol family can be represented by the general formula, CnH2n+1OH where, n may have the values 1 , 2, 3 ……… etc. The various members of a particular homologous series are called homologues. The physical properties such as density, melting point , boiling point , solubility , etc. of the members of a homologous series show almost regular variation in ascending or descending the series.

(a) What is the general formula of the homologous series of alkynes?

(b) The table shows the formulae of three organic compounds that belong to the same homologous series.

|  |  |
| --- | --- |
| First member of the homologous series | CH3 – O – CH3 |
| Second member of the homologous series | CH3 CH2 – O – CH3 |
| Third member of the homologous series | CH3 CH2 CH2 – O – CH3 |

What is the general formula of this series?

(c) Write down the molecular formula of the initial four members of CnH2n2 homologous series.

**Or**

(c) Write down the molecular formula of the initial four members of alcohol homologous series.

1. (a) Explain the formation of Mg3N2 by the transfer of electrons.

(b) Name the ions present in the compound.

(c) Give two example of each of the metals that are good conductors and poor conductors of heat respectively.

1. (a) What are the two properties of carbon which lead to the huge number of carbon compounds we see around us?

(b) Would you be able to check if water is hard by using a detergent?

(c) How can you convert ethanol to ethanoic acid?

**Section – E**

1. (a) Name a liquid metal and non-metal?

(b) Write the composition of Aqua regia.

(c) Explain Solvay process.

**Or**

(c) Write the chemical reaction for the preparation of following :

(i) Bleaching powder (ii) P.O.P (iii) Washing powder

1. In a cross between plants with pink flowers and plants with white flowers the offsprings of F1 generation all had pink flowers. When the F1 generation was self crossed, it was observed in the F2 generation that out of 100 , 75 flowers were pink. Make a cross and answer the following :

(i) What are the genotypes of the F1 progeny?

(ii) What is the ratio of pink : white flowers in the F2 generations?

1. Riya was studying dihybrid cross in an insect in which gene A is responsible for eye colour with red eye colour (A) is dominant over white eye colour (a) and gene B is responsible for wings with long wings (B) is dominant over short wings (b). She performed the cross between homologous red eye colour (A) and short wings with white eye colour and long wings.

(a) From the above given information, write the phenotype of F1 progeny. Give reason for your answer.

(b) Write the different types of F2 progeny obtained along with their phenotypic ratio when F1 progeny was selfed.