



SAMPLE QUESTION PAPER 1

CLASS X Science (086)

Term 2 (2021-22)

Max. Marks:40

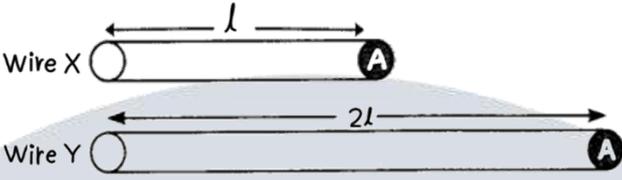
Time allowed: 2 hours

General Instructions:

- i) All questions are compulsory.
- ii) The question paper has **three sections** and **15 questions**. All questions are compulsory.
- iii) Section–A has 7 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has 2 case-based questions of 4 marks each.
- iv) Internal choices have been provided in some questions. A student must attempt only one of the alternatives in such questions.

SECTION - A

| | | |
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| 1. | Give an explanation for a) Why Carbon compounds have low boiling and melting point than ionic compounds? b) Why Carbon cannot gain 4 electrons and form C^{4-} anion? | 2 |
| 2. | Answer the following: a) Newlands law of octave was applicable upto which element? b) Name the two elements in Newland's octaves which were adjusted together in a single column with unlike elements. | 2 |
| 3. | State the changes that take place in the uterus when a) implantation of the embryo has occurred b) female gamete/egg is not fertilized | 2 |
| 4. | Give reasons as to why the following processes are different from each other: a) Fission in Amoeba and Plasmodium. b) Binary fission and Fragmentation. | 2 |
| 5. | Differentiate between Autosomes and Sex Chromosomes. OR Name the organism Mendel used for his experiments. Explain about F1 and F2 progeny obtained by Mendel when he bred tall and short varieties of the organism he experimented with. | 2 |

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| 6. | <p>Define 1 volt. Express it in terms of SI unit of work and charge.</p> <p style="text-align: center;">OR</p> <p>Out of the two wires, X and Y showed below, which one has greater resistance? Justify your answer.</p> <div style="text-align: center;">  <p>The diagram shows two horizontal wires. Wire X is the top wire, with a length labeled 'l' and a cross-sectional area labeled 'A'. Wire Y is the bottom wire, with a length labeled '2l' and a cross-sectional area labeled 'A'. Both wires have a circular terminal on the left and a shaded circular terminal on the right.</p> </div> | 2 |
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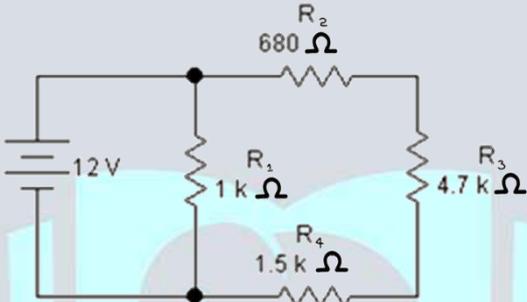
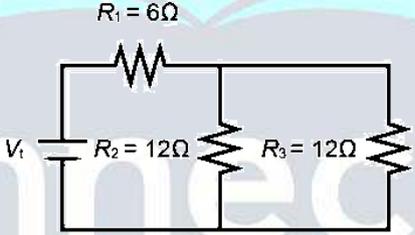
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| 7. | <p>Why is ozone layer getting depleted at the higher levels of the atmosphere?</p> <p style="text-align: center;">OR</p> <p>In the following food chain, plants provide 500J of energy to grasshopper. How much of energy will be available to Eagle from snakes?</p> <p style="text-align: center;">Plants → Grasshopper → Frog → Snake → Eagle</p> | 2 |
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SECTION – B

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| 8. | <p>Taking Potassium and chlorine as reference, answer the following:</p> <ol style="list-style-type: none"> Name the neutral atom in the Periodic Table which has the same number of electrons as K^+ and Cl^- What type of compound is formed when potassium and chlorine react? Out of Potassium and chlorine which one will have a bigger atomic radius? | 3 |
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| 9. | <p>Consider the following hydrocarbons and answer the questions below</p> <p style="text-align: center;">C_2H_6, C_3H_8, C_3H_6, C_4H_{10}, C_3H_4,</p> <ol style="list-style-type: none"> Identify the homologous series in the listed hydrocarbons. List one difference among the consecutive members of the homologous series (found in part-a) in terms of molecular mass Identify the unsaturated hydrocarbons from the given list | 3 |
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| 10. | <p>A pea plant with blue colour flower denoted by BB is crossbreed with a pea plant with white flower denoted by bb.</p> <ol style="list-style-type: none"> What is the expected colour of the flowers in their F1 progeny? What will be the percentage of plants bearing white flower in F2 generation, when the flowers of F1 plants were selfed? State the expected ratio of the genotypes BB and Bb in the F2 progeny. | 3 |
|-----|---|---|

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| 11. | <p>a) 'Current-carrying conductors experience a force in a magnetic field'. Justify the statement with an example.</p> <p>b) State the rule to determine the direction of the force.</p> <p style="text-align: center;">OR</p> <p>Explain the working of an electric motor with a well labelled diagram</p> | 3 |
| 12. | <p>Calculate the total resistance of the circuit and find the total current in the circuit.</p> <div style="text-align: center;">  <p style="text-align: center;">OR</p>  </div> <p>If the current in the circuit is 3A, calculate the voltage in the circuit.</p> | 3 |
| 13 | <p>a) Explain the flow of energy through food chain.</p> <p>b) Explain 'biological magnification' with the help of an example.</p> | 3 |
| <p>SECTION – C</p> <p>This section has 02 case-based questions (14 and 15). Each case is followed by 03 sub-questions (a, b, and c). Parts a and b are compulsory. However, an internal choice has been provided in part c.</p> | | |
| 14. | <p>Pea plants can have smooth seeds or wrinkled seeds. One of the phenotypes is completely dominant over the other. A farmer decides to pollinate one flower of a plant with smooth seeds using pollen from a plant with wrinkled seeds. The resulting pea pod has all smooth seeds.</p> <p>a. What conclusions can be drawn from the given data?</p> | 4 |

- b. The characters which appear in the first filial generation are referred as?
- c. Which genotype of parental cross will give smooth and wrinkled seeds in same proportion?

OR

On crossing of two heterozygous smooth seeded plants (Rr), a total of 1000 plants were obtained in F1 generation. What will be the respective number of smooth and wrinkled seeds obtained in F1 generation?

15.

Pooja was doing an experiment using a coil of insulated copper wire connected to a galvanometer. When a bar magnet was pushed into the coil, she observed a deflection in the galvanometer. The same observation was shown when the magnet was withdrawn from the coil.

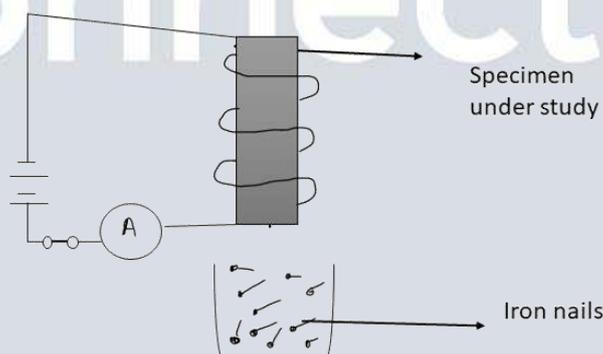
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- a) What is this phenomenon called?
- b) Explain this phenomenon?
- c) What will happen if the coil was moved instead of the bar magnet?
- d) What will happen if there is no motion of the magnet?

OR

Read the passage carefully and answer the following questions.

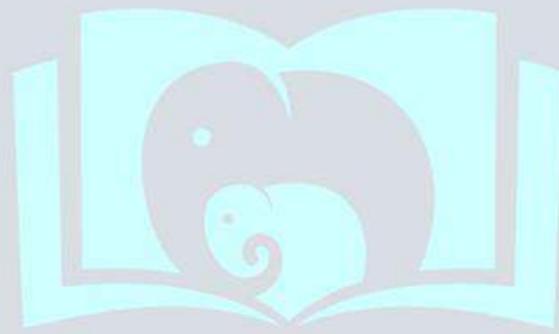
Three specimens of magnetic material were tested using the apparatus shown in the diagram. When the switch is closed, the specimen picks up some of the iron nails but when the switch is opened, many or most of the nails fall off. The number of nails picked up and left on were found for three specimens. The table shows the results.



| Specimen | Number of nails picked up | Number of nails retained by the specimen |
|----------|---------------------------|--|
| X | 35 | 4 |
| Y | 20 | 10 |
| Z | 40 | 3 |

- a) Which material is the best electromagnet among the three?

- | | | |
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| | <p>b) What does the number of nails left on the material indicate? c) What are electromagnets?</p> | |
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