

**Date:** 21-01-2021

**Class:** 10<sup>th</sup> Genesis

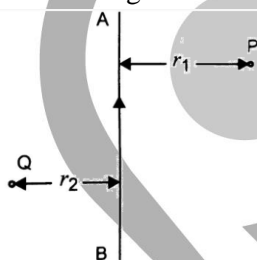
**Subject:** Science

**Test code:** SEP15(21041317)

### Physics

**M. Marks: 20**

1. What does the divergence of magnetic field lines near the ends of a current carrying straight solenoid indicate? (1 marks)
2. Can mechanical energy be retrieved from electrical energy? (1 marks)
3. AB is a current – carrying conductor in the plane of the paper as shown in fig. What are the directions of magnetic fields produced by at points P and Q? Given  $r_1 > r_2$ , where will the strength of the magnetic field be larger? (2 marks)



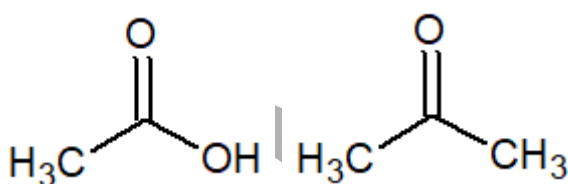
4. It is established that an electric current through a metallic conductor produces a magnetic field around it. Is there a similar magnetic field produced around a thin beam of moving (i) alpha particles, (ii) neutrons? Justify your answer. (2 marks)
5. What is the difference between a direct current and an alternating current? How many times does AC used in India change direction in one second? (2 marks)
6. Draw the magnetic field lines around a straight conductor carrying current. Name and state the rule to find the direction of magnetic field. (2 marks)
7. Explain the phenomenon of electromagnetic induction. Describe an experiment to show that a current is set up in a closed loop when an external magnetic field passing through the loop increases or decreases. (3 marks)
8. (a) State Fleming's left hand rule. (3 marks)  
(b) Write the principle of working of an electric motor.  
(c) Explain the function of the following parts of an electric motor:  
(i) Armature (ii) Brushes (iii) Split – ring
9. A convenient method to describe the magnetic field around a magnet is to draw magnetic field lines around it. In order to do so, place a magnet on a cardboard sheet and gently sprinkle some iron filings uniformly over it. The iron filings are found to arrange themselves in a pattern. These curved paths along which the iron filings arrange themselves due to the force acting on them in the magnetic field of the bar magnet are called magnetic field lines. (4 marks)  
(a) What is the direction of the magnetic field line?  
(b) Do magnetic field lines intersect each other?

- (c) How do magnetic field lines represent a non – uniform magnetic field?  
(d) How is uniform magnetic field represented by magnetic field lines?

### Chemistry

*M. Marks: 20*

1. (a) Why are covalent compounds generally poor conductors of electricity? 2  
(b) Name the following compounds.



2. (a) Give a chemical test to distinguish between saturated and unsaturated hydrocarbons. 2  
(b) Name the carbon compound which on heating with excess of concentrated sulphuric acid at 443K gives ethene.
3. Give reasons for the following. 2  
(a) Carbon forms a very large number of compounds  
(b) Air holes of gas burner are adjusted when heated vessels get blackened by flame.
4. (a) What is ethanoic acid? Write the formula of functional group present in acid. 3  
(b) What special name is given to its 5-8% Solution in water?  
(c) How does ethanoic acid react with sodium carbonate? Give chemical equation of the reaction.
5. (a) Draw the structures of the following. 3  
1. Hexanal  
2. Iso-butane  
(b) Explain cleansing action of soaps.
6. (a) What is meant by esterification? 3  
(b) How will you obtain ethanoic acid from ethanol?  
(c) Why reaction between methane and chlorine Considered as Substitution Reaction
7. (a) Explain with the help of examples 5  
1. Hydrogenation Reaction  
2. Saponification Reaction  
(b) Write two Advantages of detergents over soaps.

## **Biology**

***M. Marks: 20***

1. Give any two ways in which non-biodegradable substances would affect the environment? (2)
2. What is biological magnification? Will the values of this magnification be different at different levels of the ecosystem? (2)
3. Why bacteria and fungi are called decomposers? List any two advantages of decomposers to the Environment (3)
4. What is meant by food chain? "The number of trophic levels in a food chain is limited ".Give reasons To justify this statement? (3)
5. Write notes on the following :-
  - (a) Man-made ecosystems and Natural ecosystems. Give example (2)
  - (b) Ten percent law with example (2)
  - (c) Ecological Pyramids (2)
  - (d) Function of ozone in the upper atmosphere (2)
  - (e) Food web (2)

Pinnacle