CBSE EXAMINATION PAPER-2022

SCIENCE

(Solved)

Time allowed : 3 hours | Maximum Marks : 44

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains **20 questions.** All questions are **compulsory.**

ii. This question paper is divided into **3 sections.**

iii. **Section A** – questions number **1 to 2** are case based questions

iv. **Section B** – questions number **3 to 12** are very short answer

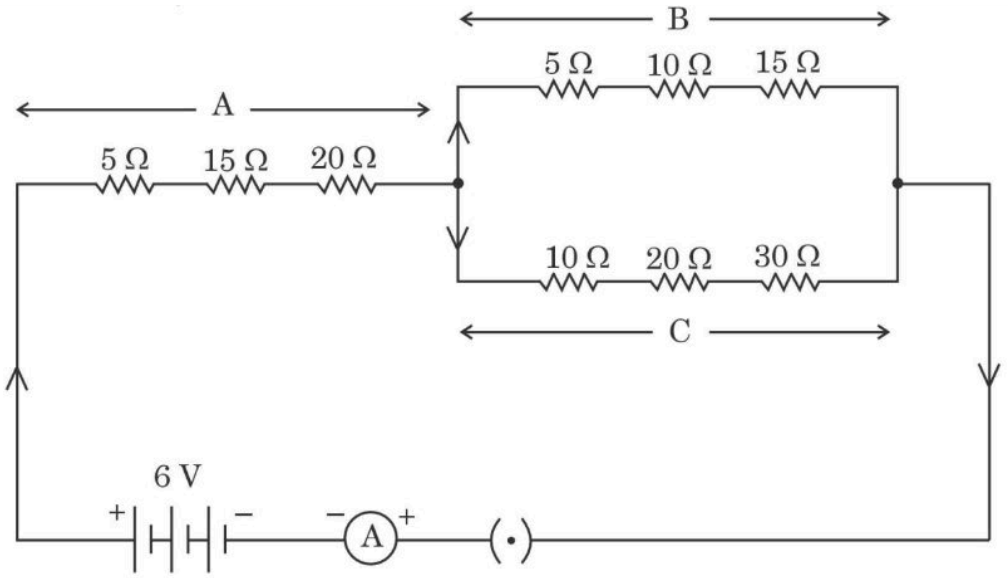
v. **Section C** – questions number **13 to 20** are short answer

vi. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.

vii. Use of calculator is NOT allowed.

Section A

Question 1. Study the following electric circuit in which the resistors are arranged in three arms A, B and C:



(1) Find the equivalent resistance of arm A.

[1 Marks]

(2) Determine the current that flows through the ammeter.

[2 Marks]

(3) Calculate the equivalent resistance of the parallel combination of the arms B and C.

[1 Marks]

(4)

Determine the current that flows in the ammeter when the arm B is withdrawn from the circuit.

[2 Marks]

Question 2.

The modes by which various organisms reproduce depend on the body design of the organisms. In asexual reproduction , a single individual parent produces offsprings without the involvement of gametes. This method is a common means of increasing the offsprings rapidly under favorable conditions. Asexual reproduction occurs mostly in unicellular organisms, some plants and certain simple multicellular animals.

(1)

State the name of the organism in which binary fission takes place in a definite orientation. Also name the disease caused by this organism.

[1 Marks]

(2)

List any two advantages of producing plants through vegetative propagation.

[1 Marks]

(3)

Explain the process of budding in Hydra.

[2 Marks]

(4)

What happens when

(i) a spirogyra filament matures and attains a considerable length, and

(ii) a spirogyra in Rhizopus bursts on maturation ?

[2 Marks]

Section B

Question 3.

Kulhads (disposable cups made of clay) and disposable paper cups both are used as an alternative for disposable plastic cups. Which one of these two can be considered as a better alternative to plastic cups and why ?

[2 Marks]

Question 4.

Human beings are most adversely affected by the Biological Magnification. State the reason. Why can ordinary washing of the edibles (fruits and vegetables) not reduce the effect of biological magnification ?

[2 Marks]

Question 5.

Draw the electron dot structure of the following:

(a) Cyclohexane

(b) Butane

[2 Marks]

Question 6.

State the criteria used by Mendeleev for creating his Periodic Table. Compare the position of isotopes of elements in the Mendeleev's Periodic Table and in the Modern Periodic Table.

[2 Marks]

Question 7.

An electric heater rated 1100 W operates at 220 V. Calculate

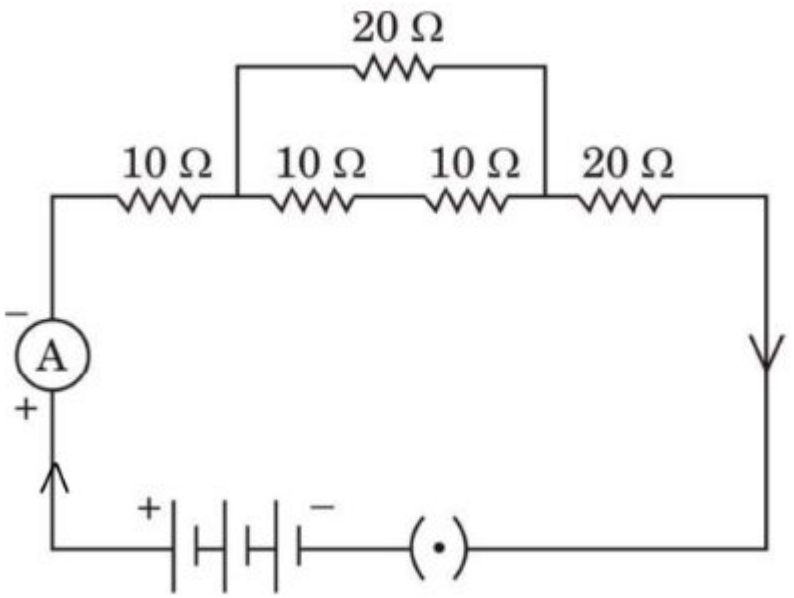
(i) its resistance, and (ii) the current drawn by it.

[2 Marks]

Question 8.

Calculate the equivalent resistance of the following electric circuit:

[2 Marks]



Question 9.

Suggest any two contraceptive methods to control the size of human population and explain them.

[2 Marks]

Question 10.

Mendel crossed two pea plants with visible contrasting characteristics and found that there were no half-way characteristics in the plants of F_1 progeny. Explain the reason for this observation of Mendel.

[2 Marks]

Question 11.

Justify the statement "Sex of the children will be determined by what they inherit from their father".

[2 Marks]

Question 12.

Name the part/organ of the human female reproductive system

(a) where contraceptive devices such as loop or copper-T are placed to prevent pregnancy.

(b) which is blocked to prevent the transfer of eggs.

(c) where formation of green cells as ova takes place.

(d) from where the embryo gets nutrition from the mother's blood.

[2 Marks]

Section C

Question 13.

What are human-made ecosystems ? Give an example. Can a human-made ecosystem become a self-sustaining ecosystem ? Give reason to justify your answer.

[3 Marks]

Question 14.

State the reason why

(i) carbon compounds have low melting and boiling points.

(ii) carbon compounds do not conduct electricity.

(iii) carbon can form only covalent compounds.

[3 Marks]

Question 15.

What is a homologous series ? Find the difference in molecular mass between the two consecutive members of a homologous series. State how in a homologous series of carbon compounds the following properties vary with increase in molecular mass:

(i) Melting and boiling points

(ii) Chemical properties

[3 Marks]

Question 16.

In the following table, some elements have been arranged in a certain pattern :

Identify the periodic law with which the given table is associated. List two important features and two anomalies of the above periodic law.

[3 Marks]

pattern :

sa (do)	re (re)	ga (mi)	ma (fa)	pa (so)	da (la)	ni (ti)
H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co and Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce and La	Zr	–	–

Question 17.

What is a Solenoid ? Draw the pattern of the magnetic field lines around a current carrying solenoid. Mark on the pattern the region where the magnetic field is uniform.

[3 Marks]

Question 18.

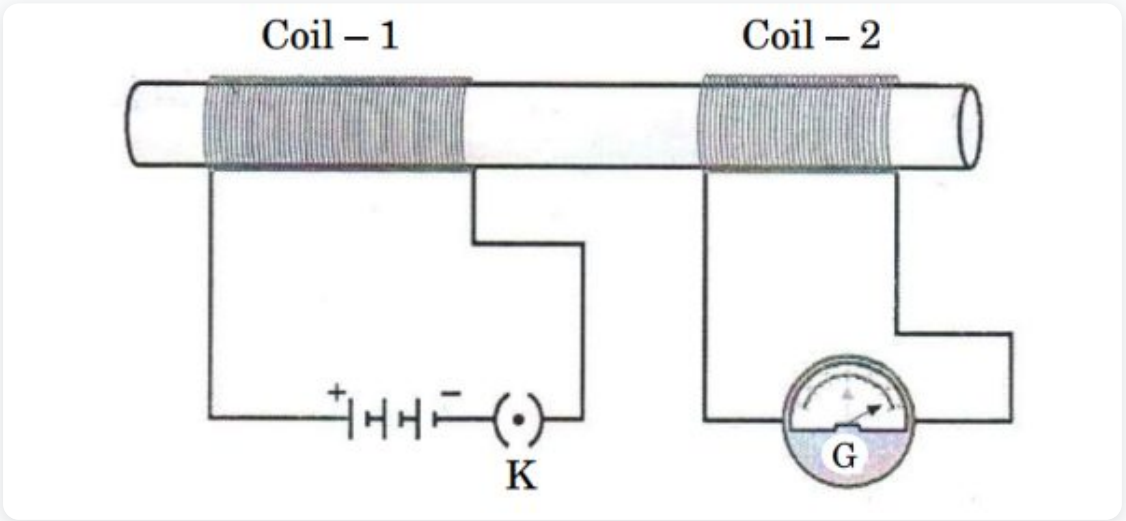
In the diagram given below, Coil 1 is connected in series with a battery and a plug key while Coil 2 is connected with a galvanometer.

(i) Why does the galvanometer show deflection only when the key (K) is plugged in and not when a steady current starts flowing in the circuit ?

(ii) What is observed in the galvanometer, when the key is plugged out ?

(iii) State the conclusion based on the observation of this activity.

[3 Marks]



Question 19.

In the figure given below, a simple electric motor is shown :

As shown in the figure, the current in the coil ABCD flows from A to B in the arm AB and C to D in the arm CD.

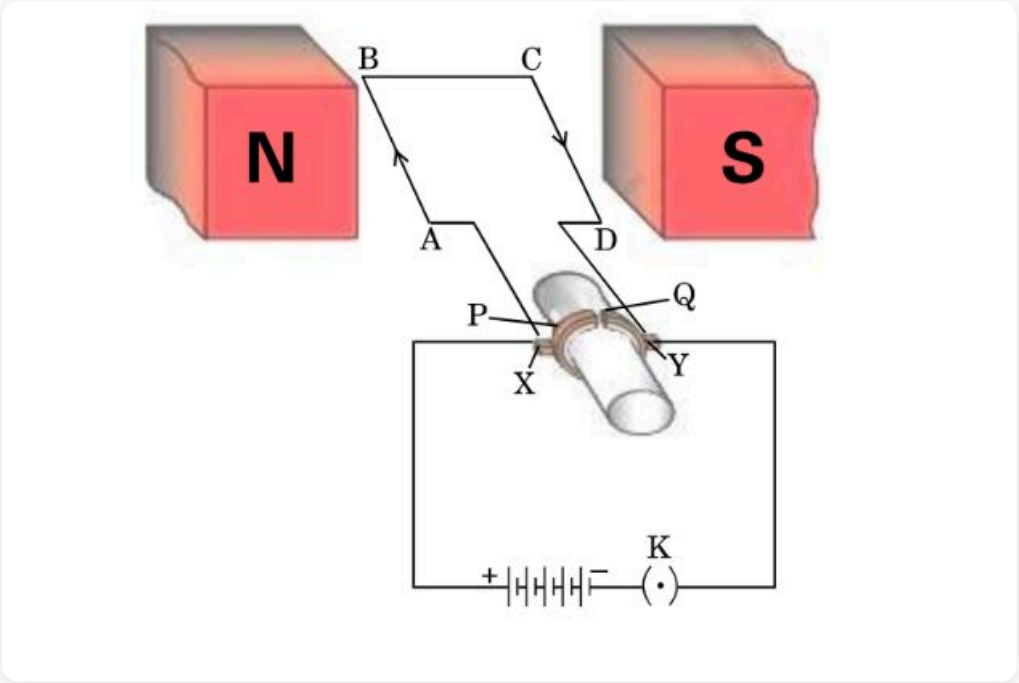
(i) State the directions in which the arms AB and CD will experience a force.

(ii) Identify the part of the electric motor that reverses the flow of current in the coil ABCD and write its name.

(iii) After the reversal of flow of current in the coil ABCD, state the directions in which the arms AB and CD will experience a force.

(iv) Name the rule which is applied to determine the direction of force on a current carrying conductor placed in a magnetic field.

[3 Marks]



Question 20.

How do Mendel's experiments show that the traits are inherited independently ? Explain.

[3 Marks]