



PHYSICS

BOOKS - U-LIKE PHYSICS (HINGLISH)

CBSE EXAMINATION PAPER 2020 (SOLVED)

Section A

1. Name a cyclic unsaturated carbon compound.



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2. The change in magnetic field lines in a coil is the cause of induced electric current in it. Name the underlying phenomenon.



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3. Answer question numbers (a) to (d) on the basis of your understanding of the following paragraph and the related studied concepts.

The growing size of the human population is a cause of concern for all people. The rate of birth and death in a given population will determine its size. Reproduction is the process by which organisms increase their population. The process of sexual maturation for reproduction is gradual and takes place while general body growth is still going on. Some degree of sexual maturation does not necessarily mean that the mind or body is ready for sexual acts or for having and bringing up children. Various contraceptive devices are being used by human beings to

control the size of population.

List two common signs of sexual maturation in boys and girls.



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4. Answer question numbers (a) to (d) on the basis of your understanding of the following paragraph and the related studied concepts.

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What is the result of reckless female foeticide ?



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Which contraceptive method changes the hormonal balance of the body ?



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necessarily mean that the mind or body is ready for sexual acts or for having and bringing up children. Various contraceptive devices are being used by human beings to control the size of population.

Write two factors that determine the size of a population.



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7. Answer question numbers (a) to (d) on the basis of your understanding of the following

paragraph and the related studied concepts.

Human body is made up of five important components, of which water is the main component. Food as well as potable water are essential for every human being. The food is obtained from plants through agriculture. Pesticides are being used extensively for a high yield in the fields. These pesticides are absorbed by the plants from the soil along with water and minerals and from the water bodies these pesticides are taken up by the aquatic animals and plants. As these chemicals are not biodegradable, they get accumulated

progressively at each trophic level. The maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.

Why is the maximum concentration of pesticides found in human beings ?



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maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.

Give one method which could be applied to reduce our intake of pesticides through food to some extent.



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9. Answer question numbers (a) to (d) on the basis of your understanding of the following paragraph and the related studied concepts.

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maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.

Various steps in a food chain represent :

- A. Food web
- B. Trophic level
- C. Ecosystem
- D. Biomagnification

Answer:



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10. Answer question numbers (a) to (d) on the basis of your understanding of the following paragraph and the related studied concepts.

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with water and minerals and from the water bodies these pesticides are taken up by the aquatic animals and plants. As these chemicals are not biodegradable, they get accumulated progressively at each trophic level. The maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.

With regard to various food chains operating in an ecosystem, man is a :

A. Consumer

B. Producer

C. Producer and consumer

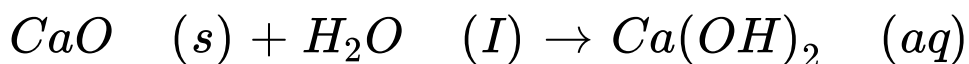
D. Producer and decomposer

Answer:



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11. Calcium oxide reacts vigorously with water to produce slaked lime.



This reaction can be classified as :

(A) Combination reaction

(B) Exothermic reaction

(C) Endothermic reaction

(D) Oxidation reaction

A. (A) and (C)

B. (C) and (D)

C. (A), (C) and (D)

D. (A) and (B)

Answer: D



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12. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of a :

- A. Combination reaction.
- B. Displacement reaction.
- C. Decomposition reaction.
- D. Double displacement reaction.

Answer: D



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13. In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution :

(A) exchange of atoms takes place.

(B) exchange of ions takes place.

(C) a precipitate is produced.

(D) an insoluble salt is produced.

The correct option is :

A. (B) and (D)

B. (A) and (C)

C. only (B)

D. (B), (C) and (D)

Answer: D



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14. Baking soda is a mixture of :

A. Sodium carbonate and acetic acid.

B. Sodium carbonate and tartaric acid.

C. Sodium hydrogen carbonate and tartaric acid.

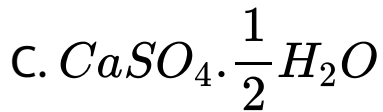
D. Sodium hydrogen carbonate and acetic acid.

Answer: C



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15. The chemical formula for plaster of Paris is :



Answer: C



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16. The laws of reflection hold true for :

A. plane mirrors only.

B. concave mirrors only.

C. convex mirrors only.

D. all reflecting surfaces.

Answer: D



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17. When an object is kept within the focus of a concave mirror, an enlarged image is formed behind the mirror. This image is :

A. real.

B. inverted.

C. virtual and inverted.

D. virtual and erect.

Answer: D



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18. At the time of short circuit, the electric current in the circuit :

A. vary continuously.

B. does not change.

C. reduces substantially.

D. increases heavily.

Answer: D



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19. Two bulbs of 100 W and 40 W are connected in series. The current through the

100 W bulb is 1 A. The current through the 40

W bulb will be :

A. 0.4 A

B. 0.6 A

C. 0.8 A

D. 1A

Answer: D



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20. Which one of the following is responsible for the sustenance of underground water ?

A. Loss of vegetation cover

B. Diversion for high water demanding crops

C. Pollution from urban wastes

D. Afforestation

Answer: D



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21. Incomplete combustion of coal and petroleum :

(A) increases air pollution.

(B) increases efficiency of machines.

(C) reduces global warming.

(D) produce poisonous gases.

The correct option is :

A. (A) and (B)

B. (A) and (D)

C. (B) and (C)

D. (C) and (D)

Answer: B



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22. Assertion (A) : Esterification is a process in which a sweet smelling substance is produced.

Reason (R) : When esters react with sodium hydroxide, an alcohol and sodium salt of carboxylic acid are obtained.

A. Both (A) and (R) are true and (R) is correct explanation of the assertion.

B. Both A and R are true but R is not the correct explanation of the Assertion.

C. (A) is true but (R) is false.

D. (A) is false but (R) is true.

Answer: B



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23. Assertion (A) : In the process of nuclear fission, the amount of nuclear energy generated by the fission of an atom of uranium is so tremendous that it produces 10 million times the energy produced by the combustion of an atom of carbon from coal.

Reason (R) : The nucleus of a heavy atom such as uranium, when bombarded with low energy neutrons, splits apart into lighter nuclei. The mass difference between the original nucleus and the product nuclei gets converted to tremendous energy.

A. Both (A) and (R) are true and (R) is correct explanation of the assertion.

B. Both A and R are true but R is not the correct explanation of the Assertion.

C. (A) is true but (R) is false.

D. (A) is false but (R) is true.

Answer: A



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24. Covalent compounds have low melting and boiling point. Why?



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25. Answer question numbers 3(a) to 3(d) on the basis of your understanding of the following information and related studied concepts.

Thyroid gland is a bilobed structure situated in our neck region. It secretes a hormone

called thyroxine. Iodine is necessary for the thyroid gland to make thyroxine. Thyroxine regulates carbohydrate, protein and fat metabolism in the body. It promotes growth of body tissues also. When there is an excess of thyroxine in the body, a person suffers from hyperthyroidism and if this gland is underactive it results in hypothyroidism. Hyperthyroidism is diagnosed by blood tests that measure the levels of thyroxine and Thyroid Stimulating Hormone (TSH). Hypothyroidism is caused due to the deficiency of iodine in our diet resulting in a

disease called goitre. Iodised salt can be included in our diet to control it.

Where is thyroid gland situated in our body ?



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State the function of thyroxine in human body.



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What is hyperthyroidism ?



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disease called goitre. Iodised salt can be included in our diet to control it.

How can we control hypothyroidism ?



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29. Answer question numbers 4(a) to 4(d) on the basis of your understanding of the following paragraph and the related studied concepts.

Geothermal energy is the energy produced by the heat of molten rocks formed in the deeper

hot regions of the earth's crust. This energy is harnessed to generate electricity. When water is made to flow deep underground in the rocks it returns as steam (or hot water, which is later converted to steam) to drive a turbine on an electric power generator. In India, exploration and study of geothermal fields started in 1970. The Geological Survey in India has identified 350 geothermal energy locations in the country. The most promising of these is in Puga valley of Ladakh. The estimated potential for geothermal energy in India is about 10000 MW. There are seven geothermal provinces in

India namely the Himalayas, Sohna, West coast, Cambay, Son-Narmada-Tapi, Godavari and Mahanadi. Most power stations in India produce Alternating Current (A.C.).

What are geothermal energy hot-spots ?



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Name two countries, other than India, where power plants based on geothermal energy are operational.



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Name the phenomenon that explains the working of an electric generator.



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State an important advantage of using A.C. over D.C.



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33. On the basis of electronic configuration of $3X$, the group number and period of the element 'X' is :

- A. Group 15 period 2
- B. Group 13 period 2
- C. Group 9 period 5

D. Group 13 period 5

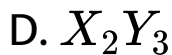
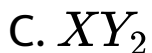
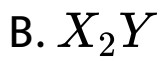
Answer: B



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34. An element 'X' with atomic number 11 forms a compound with element 'Y' with atomic number 8. The formula of the compound formed is

A. XY



Answer: B



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35. A visually challenged student, has to perform a lab test to detect the presence of acid in a given solution. The acid-base indicator preferred by him will be :

A. Blue litmus.

B. Clove oil.

C. Red cabbage extract.

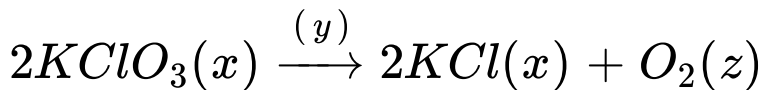
D. Hibiscus extract.

Answer: B



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36. Identify 'x', 'y' and 'z' in the following reaction :



A. $x = \text{gas}$, $y = \text{reaction condition}$, $z = \text{gas}$

B. $x = \text{solid}$, $y = \text{liquid}$, $z = \text{gas}$

C. $x = \text{number of moles of } KClO_3$, $y =$
reaction condition, $z = \text{no. of molecules}$
of oxygen.

D. $x = \text{physical state of } KClO_3$ and KCl , $y =$
reaction condition, $z = \text{physical state of}$
 O_2 .

Answer: D



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37. Bandharas and Tals are age old water harvesting concepts/structures found in

A. Bihar

B. Maharashtra

C. Tamil Nadu.

D. Rajasthan

Answer: B



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38. Which of the following are water intensive crops ?

- A. Wheat and rice
- B. Wheat and sugarcane
- C. Sugarcane and rice
- D. Wheat and gram

Answer: A



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39. The most poisonous product formed by incomplete combustion of fossil fuels is

- A. Carbon dioxide.
- B. Nitrogen dioxide
- C. Carbon monoxide.
- D. Sulphur dioxide.

Answer: C



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40. The maximum resistance which can be made using four resistors each of $2\ \Omega$ is

A. $2\ \Omega$

B. $4\ \Omega$

C. $8\ \Omega$

D. $16\ \Omega$

Answer: C



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41. Consider the following reasons for the reddish appearance of the sun at the sunrise or the sunset :

(A) Light from the sun near the horizon passes through thinner layers of air.

(B) Light from the sun covers larger distance of the earth's atmosphere before reaching our eyes.

(C) Near the horizon, most of the blue light and shorter wavelengths are scattered away by the particles.

(D) Light from the sun near the horizon passes through thicker layers of air.

The correct reasons are

A. (A) and (C) only.

B. (B), (C) and (D).

C. (A) and (B) only.

D. (C) and (D) only.

Answer: B



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42. Person suffering from cataract has

- A. elongated eyeball.
- B. excessive curvature of eye lens.
- C. weakened ciliary muscles.
- D. opaque eye lens.

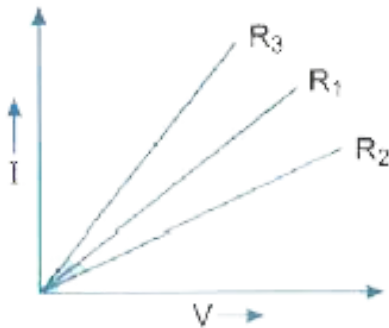
Answer: D



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43. A student plots V-I graphs for three samples of nichrome wire with resistances R_1 , R_2 and R_3 .

Choose from the following the statement that holds true for this graph.



A. $R_1 = R_2 = R_3$

B. $R_1 > R_2 > R_3$

C. $R_3 > R_2 > R_1$

D. $R_2 > R_1 > R_3$

Answer: D



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44. Assertion (A): The metals and alloys are good conductors of electricity.

Reason (R) : Bronze is an alloy of copper and tin and it is not a good conductor of electricity.

- A. Both (A) and (R) are true and (R) is correct explanation of the assertion.
- B. Both (A) and (R) are true but (R) is not the correct explanation of the assertion.
- C. (A) is true but (R) is false.
- D. (A) is false but (R) is true.

Answer: D



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45. Assertion (A) : Ethanoic acid is also known as glacial acetic acid.

Reason (R) : The melting point of pure ethanoic acid is 290 K and hence it often freezes during winters in cold climates.

A. Both (A) and (R) are true and (R) is correct explanation of the assertion.

B. Both (A) and (R) are true but (R) is not the correct explanation of the assertion.

C. (A) is true but (R) is false.

D. (A) is false but (R) is true.

Answer: A



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Section B

1. 1 g of copper powder was taken in a China dish and heated. What change takes place on heating ? When hydrogen gas is passed over this heated substance, a visible change is seen

in it. Give the chemical equations of reactions, the name and the colour of the products formed in each case.



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2. List the important products of the Chlor-alkali process. Write one important use of each.



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3. How is washing soda prepared from sodium carbonate ? Give its chemical equation. State the type of this salt. Name the type of hardness of water which can be removed by it ?



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4. 3 mL of ethanol is taken in a test tube and warmed gently in a water bath. A 5% solution of alkaline potassium permanganate is added

first drop by drop to this solution, then in excess.

(i) How is 5% solution of KMnO_4 prepared ?

(ii) State the role of alkaline potassium permanganate in this reaction. What happens on adding it in excess ?

(iii) Write chemical equation of this reaction.



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5. A squirrel is in a scary situation. Its body has to prepare for either fighting or running away,

State the immediate changes that take place in its body so that the squirrel is able to either fight or run ?



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6. Why is chemical communication better than electrical impulses as a means of communication between cells in a multi-cellular organism ?



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7. Define the term pollination. Differentiate between self pollination and cross pollination.

What is the significance of pollination ?



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8. What are homologous structures ? Give an example. Is it necessary that homologous structures always have a common ancestor.

Justify your answer.



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9. Why is Tyndall effect shown by colloidal particles ? State four instances of observing the Tyndall effect.



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10. Differentiate between a glass slab and a glass prism. What happens when a narrow beam of (i) a monochromatic light, and (ii) white light passes through (a) glass slab and (b) glass prism ?





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11. Draw a labelled diagram to show (i) reddish appearance of the sun at the sunrise or the sunset and (ii) white appearance of the sun at noon when it is overhead.



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12. A V-I graph for a nichrome wire is given below. What do you infer from this graph ?
Draw a labelled circuit diagram to obtain such

a graph.



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13. (a) Write the mathematical expression for Joule's law of heating.

(b) Compute the heat generated while transferring 96000 coulomb of charge in two hours through a potential difference of 40 V.



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14. Give reasons for the following:

(i) Only one half of water molecule is shown in the formula of Plaster of Paris.

(ii) Sodium hydrogen carbonate is used as an antacid.

(iii) On strong heating, blue coloured copper sulphate crystals turn white.



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15. (i) Draw a labelled diagram to show the preparation of hydrogen chloride gas in

laboratory.

(ii) Test the gas evolved first with dry and then with wet litmus paper. In which of the two cases, does the litmus paper show change in colour ?

(iii) State the reason of exhibiting acidic character by dry HCl gas / HCl solution.



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16. A compound 'A' is used in the manufacture of cement. When dissolved in water, it evolves

a large amount of heat and forms compound 'B'.

(i) Identify A and B.

(ii) Write chemical equation for the reaction of A with water.

(iii) List two types of reaction in which this reaction may be classified.



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17. The position of three elements A, B and C in the Modern periodic table is as follows :

Period ↓ \ Group →	1	2	13	14	15	16	17	18
1	B							
2							A	
3						C		

Write formula of compound formed between :

(i) B and A,

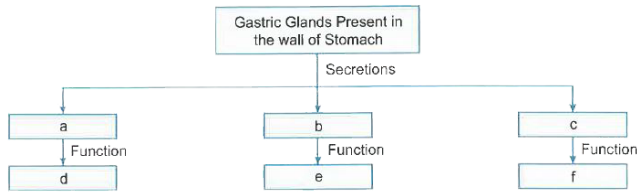
(ii) B and C

(b) Is any of the three elements a metal ? Give reason to justify your answer.



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18. Complete the following flow chart as per the given instructions :



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19. Construct a terrestrial food chain comprising four trophic levels.

(b) What will happen if we kill all the organisms in one trophic level ?

(c) Calculate the amount of energy available to the organisms at the fourth trophic level if the

energy available to the organisms at the second trophic level is 2000 J.



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20. Complete the following table :

	<i>Oxygen</i>	<i>Ozone</i>
Formula	(i) _____	(ii) _____
Benefits to biotic component	(iii) _____	(iv) _____

(b) How is ozone formed at the higher levels of atmosphere ?



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21. What are fossils ?

(b) Describe two methods of determining the age of fossils.



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22. Why did Mendel carry out an experiment to study inheritance of two traits in garden-pea ?

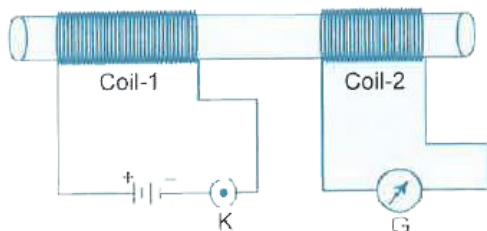
(b) What were his findings with respect to inheritance of traits in F1 and F2 generation ?

(c) State the ratio obtained in the F2

generation in the above mentioned experiment.

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23. Two coils of insulated copper wire are wound over a non-conducting cylinder as shown. Coil 1 has comparative large number of turns. State your observations, when



(i) Key K is closed. (ii) Key K is opened

Give reason for each of your observations.



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24. List two causes of Hypermetropia.

(b) Draw ray diagrams showing (i) a hypermetropic eye and (ii) its correction using suitable optical device.



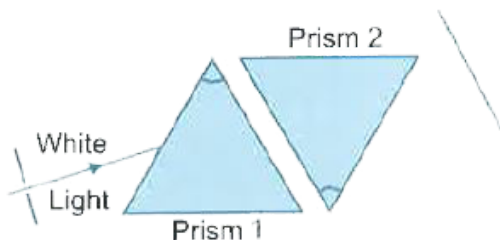
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25. State the relation between colour of scattered light and size of the scattering particle.

(b) The apparent position of an object, when seen through the hot air, fluctuates or wavers.

State the basic cause of this observation.

(c) Complete the path of white light when it passes through two identical prisms placed as shown:





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26. Draw ray diagrams for the following cases when a ray of light :

(i) passing through centre of curvature of a concave mirror is incident on it.

(ii) parallel to principal axis is incident on convex mirror.

(iii) is passing through focus of a concave mirror incident on it.



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Section C

1. Carbon cannot reduce the oxides of sodium, magnesium and aluminium to their respective metals. Why ? Where are these metals placed in the reactivity series? How are these metals obtained from their ores ? Take an example to explain the process of extraction along with chemical equations.



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2. The position of certain elements in the Modern Periodic Table are shown below:



Using the above table answer the following questions giving reasons in each case :

(i) Which element will form only covalent compounds ?

(ii) Which element is a non-metal with valency 2 ?

(iii) Which element is a metal with valency 2 ?

(iv) Out of H, C and F which has largest atomic

size ?

(v) To which family does H, C and F belong ?



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3. Define atomic size. Give its unit of measurement. In the Modern Periodic Table what trend is observed in the atomic radius in a group and a period and why is it so ?



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4. (a) Why is there a difference in the rate of breathing between aquatic organisms and terrestrial organisms ? Explain.

(b) Draw a diagram of human respiratory system and label - pharynx, trachea, lungs, diaphragm and alveolar sac on it.



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5. (a) Name the organs that form the excretory system in human beings.

(b) Describe in brief how urine is produced in human body.



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6. (a) What is the law of dominance of traits ?

Explain with an example.

(b) Why are the traits acquired during the life time of an individual not inherited ? Explain.



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7. Draw a ray diagram in each of the following cases to show the formation of image, when the object is placed :

(i) between optical centre and principal focus of a convex lens.

(ii) anywhere in front of a concave lens.

(iii) at $2F$ of a convex lens.

State the signs and values of magnifications in the above mentioned cases (i) and (ii).



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8. An object 4.0 cm in size, is placed 25.0 cm in front of a concave mirror of focal length 15.0 cm.

(i) At what distance from the mirror should a screen be placed in order to obtain a sharp image.

(ii) Find the size of the image.

(iii) Draw a ray diagram to show the formation of image in this case.



View Text Solution

9. (a) What is an electromagnet ? List any two uses.

(b) Draw a labelled diagram to show how an electromagnet is made.

(c) State the purpose of soft iron core used in making an electromagnet.

(d) List two ways of increasing the strength of an electromagnet if the material of the electromagnet is fixed.



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10. What is a homologous series ? Explain with an example.

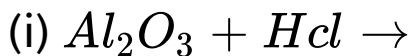
(b) Define the following terms giving one example of each.

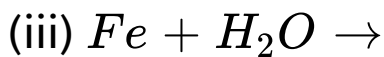
(i) Esterification (ii) Addition reaction



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11. Complete and balance the following chemical equations :





(b) An element 'X' displaces iron from the aqueous solution of iron sulphate. List v observations if the element 'X' is treated with the aqueous solutions of copper sulphate, zinc sulphate and silver nitrate. Based on the observations arrange X, Zn, Cu and Ag in increasing order of their reactivities.



View Text Solution

12. Name the following:

(i) Metal that can be cut by knife

(ii) Lustrous non-metal

(iii) Metal that exists in liquid state at room temperature

(iv) Most malleable and ductile metal

(v) Metal that is best conductor of electricity

(vi) Non-metal that can exist in different forms

(b) How are alloys better than metals ? Give composition of solder and amalgam.



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13. List three different categories of contraception methods.

(b) Why has Government of India prohibited prenatal sex determination by law ? State its benefits in the long run.

(c) Unsafe sexual act can lead to various infections. Name two bacterial and two viral infections caused due to unsafe sex.



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14. In the female reproductive system of human beings, state the functions of

(i) ovary (ii) oviduct

(b) Mention the changes which the uterus undergoes, when

(i) it has to receive a zygote. (ii) no fertilisation takes place.

(c) State the function of placenta.



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15. Blood circulation in fishes is different from the blood circulation in human beings." Justify the statement

(b) Describe "blood circulation" in human beings.



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16. A concave mirror of focal length 10 cm can produce a magnified real as well as virtual image of an object placed in front of it. Draw

ray diagrams to justify this statement.

(b) An object is placed perpendicular to the principal axis of a convex mirror of focal length 10 cm. The distance of the object from the pole of the mirror is 10 cm. Find the position of the image formed.



[View Text Solution](#)

17. Define the following terms :

(i) Power of a lens

(ii) Principal focus of a concave mirror

(b) Write the relationship among the object distance (u), image distance (v) and the focal length (f) of a

(i) Spherical lens

(ii) Spherical mirror

(c) An object is placed at a distance of 10 cm from optical centre of a convex lens of focal length 15 cm. Draw a labelled ray diagram to show the formation of image in this case.



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18. A $6\ \Omega$ resistance wire is doubled on itself. Calculate the new resistance of the wire.

(b) Three $2\ \Omega$ resistors A, B and C are connected in such a way that the total resistance of the combination is $3\ \Omega$. Show the arrangement of the three resistors and justify your answer.



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Section A

1. Define the term induced electric current.



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2. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

Around the year 1800, only 30 elements were known. Dobereiner in 1817 and Newlands in 1866 tried to arrange the then known elements and framed laws which were rejected by the scientists. Even After the rejection of the

propose laws, many scientists continued to search for a pattern that correlated the properties of elements with their atomic masses.

The main credit for classifying elements goes to Mendeleev for his most important contribution to the early development of Periodic table of elements wherein he arranged the elements on the basis of their fundamental property, the atomic mass and also on the similarity of chemical properties. The formulae of their hydrides and oxides were treated as basic criteria for the

classification of the elements.

However, Mendeleev's classification also had some limitations as it could not assign the position to isotopes. He left some gaps in the Periodic table.

State Mendeleev's Periodic Law.



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3. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

Around the year 1800, only 30 elements were known. Dobereiner in 1817 and Newlands in 1866 tried to arrange the then known elements and framed laws which were rejected by the scientists. Even After the rejection of the propose laws, many scientists continued to search for a pattern that correlated the properties of elements with their atomic masses.

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However, Mendeleev's classification also had some limitations as it could not assign the position to isotopes. He left some gaps in the Periodic table.

Why did Mendeleev leave some gaps in the Periodic Table ?



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4. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

Around the year 1800, only 30 elements were known. Dobereiner in 1817 and Newlands in 1866 tried to arrange the then known elements and framed laws which were rejected by the scientists. Even After the rejection of the proposed laws, many scientists continued to search for a pattern that correlated the properties of elements with their atomic

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However, Mendeleev's classification also had some limitations as it could not assign the

position to isotopes. He left some gaps in the Periodic table.

If the letter 'R' was used to represent any of the elements in the group, then the hydride and oxide of carbon would respectively be represented as

(i) RH_4 , RO (ii) RH_4 , RO_2 (iii) RH_2 , RO_2 (iv)

RH_2 , RO



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5. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

Around the year 1800, only 30 elements were known. Dobereiner in 1817 and Newlands in 1866 tried to arrange the then known elements and framed laws which were rejected by the scientists. Even After the rejection of the proposed laws, many scientists continued to search for a pattern that correlated the properties of elements with their atomic masses.

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However, Mendeleev's classification also had some limitations as it could not assign the position to isotopes. He left some gaps in the

Periodic table.

Isotopes are

(i) Atoms of an element with similar chemical properties but different atomic masses.

(ii) Atoms of different elements with similar chemical properties but different atomic masses.

(iii) Atoms of an different with different chemical properties but same atomic masses.

(iv) Atoms of different elements with different chemical properties but same atomic masses.



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6. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

India today is facing the problem of overuse of resources, contamination of water and soil and lack of methods of processing the waste.

The time has come for the world to say goodbye to "single-use plastics". Steps must be undertaken to develop environment-friendly substitutes, effective plastic waste collection and methods of its disposal.

Indore treated 15 lakh metric tonnes of waste

in just 3 years, through biomining and bioremediation, techniques. Bioremediation involves introducing microbes into a landfill to naturally 'break' it down and biomining involves using trommel machines to sift through the waste to separate the soil and the waste component. The city managed to chip away 15 lakh metric tonnes of waste at a cost of around Rs. 10 crore. A similar experiment was successfully carried out in Ahmedabad also.

State two methods of effective plastic waste collection in your school.



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7. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

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Name any two uses of "single-use plastic" in daily life.



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8. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

India today is facing the problem of overuse of resources, contamination of water and soil and lack of methods of processing the waste.

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cost of around Rs. 10 crore. A similar experiment was successfully carried out in Ahmedabad also.

If we discontinue the use of plastic, how can an environment-friendly substitute be provided?

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9. Answer question numbers (a) - (d) on the basis of your understanding of the following paragraph and the related studied concepts :

India today is facing the problem of overuse of resources, contamination of water and soil and lack of methods of processing the waste. The time has come for the world to say goodbye to "single-use plastics". Steps must be undertaken to develop environment-friendly substitutes, effective plastic waste collection and methods of its disposal.

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involves using trommel machines to sift through the waste to separate the soil and the waste component. The city managed to chip away 15 lakh metric tonnes of waste at a cost of around Rs. 10 crore. A similar experiment was successfully carried out in Ahmedabad also.

Do you think microbes will work similarly in landfill sites as they work in the laboratory ?
Justify your answer.



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10. Which one of the following statements is correct about the human circular system ?

A. Blood transports only oxygens and not carbon dioxide.

B. Human heart has five chambers

C. Valves ensure that the blood does not flow backwards.

D. Both oxygen-rich and oxygen-deficient blood gets mixed in the heart.

Answer: C



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11. Anaerobic process

- A. Takes place in yeast during fermentation.
- B. takes place in the presence of oxygen.
- C. produces only energy in the muscles of human beings.
- D. produces ethanol, oxygen and energy

Answer: A



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12. Most of the digestion and absorption of the food takes place in the

A. small intestine

B. liver

C. stomach

D. large intestine

Answer: A



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13. Fertilisation is the process of

A. transfer of male gamete to female gamete

B. fusion of nuclei of male and female gamete

C. adhesion of male and female reproductive organs

D. the formation of gametes reproductive organ

Answer: B



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14. If a person has five resistors each of value $\frac{1}{5}\Omega$, then the maximum resistance he can obtain by connecting them is

A. 1Ω

B. 5Ω

C. 10Ω

D. 25Ω

Answer: A



View Text Solution

15. The resistance of a resistor is reduced to half of its initial value. In doing so, if other parameters of the circuit remain unchanged, the heating effects in the resistor will become

A. two times

B. half

C. one-fourth

D. four times

Answer: A



View Text Solution

16. Fleming's Right-hand rule gives

A. magnitude of the induced current.

B. magnitude of the magnetic field

C. direction of the induced current

D. both, direction and magnitude of the
induced current

Answer: C



View Text Solution

17. Which one of the following statements is not true about nuclear energy generation in a nuclear reactor ?

A. Energy is obtained by a process called nuclear fission

B. The nucleus of Uranium is bombarded with high energy neutrons

C. A chain reaction is set in the process

D. In this process a tremendous amount of energy is released at a controlled rate

Answer: B



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18. The biggest source of energy of Earth's surface is

A. Biomass

B. Solar radiations

C. Tides

D. Winds

Answer: B



View Text Solution

19. Food web is constituted by

A. relationship between the organisms and the environment

B. relationship between plants and animals

C. various interlinked food chains in an ecosystem

D. relationship between animals and environment

Answer: C



View Text Solution

20. Choose the incorrect statement from the following :

A. Ozone is a molecule formed by three atoms of oxygens

B. Ozone shields the surface of the earth from ultraviolet radiations.

C. Ozone is deadly poisonous

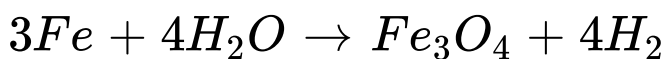
D. Ozone gets decomposed by UV radiations.

Answer: D



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21. Assertion (A) : Following is a balanced chemical equation for the action of steam on iron:



Reason (R) : The law of conservation of mass holds good for a chemical equation.

A. Both (A) and (R) are true and (R) is correct explanation of the assertion.

B. Both (A) and (R) are true but (R) is not correct explanation of the assertion.

C. (A) is true but (R) is false.

D. (A) is false but (R) is true.

Answer: A



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22. Assertion (A) : The sex of a child in human beings will be determined by the type of chromosome he/she inherits from the father.

Reason (R) : A child who inherits 'X' chromosome from his father would be a girl (XX) , while a child who inherits a 'Y' chromosome from the father would be a boy (XY).

A. Both (A) and (R) are true and (R) is correct explanation of the assertion.

B. Both (A) and (R) are true but (R) is not correct explanation of the assertion.

C. (A) is true but (R) is false.

D. (A) is false but (R) is true.

Answer: A



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Section B

1. Lead nitrate solution is added to a test tube containing potassium iodide solution.

(a) Write the name and colour of the compound precipitated.

(b) Write the balanced chemical equation for the reaction involved.

(c) Name the type of this reaction justifying your answer.



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2. What happens when food materials containing fats and oils are left for a long time ? List two observable changes and suggest three ways by which this phenomenon can be prevented.



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3. List three differentiating features between the processes of galvanisation and alloying.



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4. Compare in tubular form the reactivities of the following metals with cold and hot water :

(a) Sodium (b) Calcium (c) Magnesium



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5. Carbon, a member of group 14 forms a large number of carbon compounds estimated to be about 3 million. Why is this property not exhibited by other elements of this group?

Explain.



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6. A cheetah, on seeing a prey, moves towards him at a very high speed. What causes the movement of his muscles ? How does the chemistry of cellular components of muscles change during this event?



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7. Define geotropism. Draw a labelled diagram of a plant showing geotropic movements of its parts.



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8. Define the term evolution. "Evolution cannot be equated with progress." Justify this statement.



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9. "During the course of evolution organs or features may be adapted for new functions".

Explain this fact by choosing an appropriate example.



[View Text Solution](#)

10. A concave mirror is used for image formation for different positions of an object.

What inferences can be drawn about the following when an object is placed at a distance of 10 cm from the pole of a concave

mirror of focal length 15cm ?

(a) position of the image (b) size of the image

(c) nature of the image

Draw a labelled ray diagram to justify your inferences.



[View Text Solution](#)

11. The refractive index of a medium 'x' with respect to a medium y is $\frac{2}{3}$ and the refractive index of medium with respect to medium 'z' is $\frac{4}{3}$. Find the refractive index of medium 'z'

with respect to medium 'x'. If the speed of light in medium 'x' is $3 \times 10^8 \text{ms}^{-1}$, into to calculate the speed of light in medium 'y'.



[View Text Solution](#)

12. A person may suffer from both myopia and hypermetropia defects.

(a) What is this condition called ?

(b) When does it happen ?

(c) Name the type of lens often required by

the person suffering from this defect draw labelled diagram of such lenses.



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13. How will use two identical glass prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light ? Draw and label the ray diagram.



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14. A cloth strip dipped in onion juice is used for testing a liquid 'X'. The liquid 'X' changes its odour. Which type of an indicator is onion juice ? The liquid 'X' turns blue litmus red. List the observations the liquid 'X' will show on reacting with the following :

(a) zinc granules

(b) solid sodium carbonate

write the chemical equation for the reaction involved.



[View Text Solution](#)

15. Define water of crystallisation. Give the chemical formula for two compounds as examples. How can it be proved that the water of crystallisation makes a difference in the state and colour of the compounds?



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Section C

1. (i) Write two properties of gold which make it the most suitable metal for ornaments.

(ii) Name two metals which are the best conductors of heat.

(iii) Name two metals which melt when you keep them on your palm.



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2. Explain the formation of ionic compound CaO with electron-dot structure. Atomic

numbers of calcium and oxygen are 20 and 8 respectively.



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3. Why is nutrition necessary for the human body ?



[View Text Solution](#)

4. What causes movement of food inside the alimentary canal ?



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5. Why is small intestine in herbivores longer than in carnivores ?



[View Text Solution](#)

6. What will happen if mucus is not secreted by the gastric glands



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7. Draw a neat diagram showing fertilization in a flower and label (a) Pollen tube, (b) male germ cell and (c) female germ cell, on it. Explain the process of fertilization in flower what happens to the (i) ovary and ovule after fertilisation ?



[View Text Solution](#)

8. What is puberty ?



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9. Describe in brief the functions of the following parts in the human male reproductive system :

- (i) Testes
- (ii) Seminal vesicle
- (iii) Vas deferens
- (iv) urethra



View Text Solution

10. Why are testes located outside the abdominal cavity ?



View Text Solution

11. State how sperms move towards the female germ cell.



View Text Solution

12. Draw a schematic diagram of a circuit consisting of a battery of 3 cells of 2V each, a combination of three resistors of 10Ω , 20Ω and 30Ω connected in a parallel, a plug key and an ammeter, all connected in series. Use the circuit to find the value of the following :

(a) current through each resistor

(b) total current in the circuit.

(c) total effective resistance of the circuit.



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13. Two identical resistors, each of resistance are connected in (i) series, and (ii) parallel, in turn to a battery of 6 V. Calculate the ratio of the power consumed in the combination of resistors in each case.



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14. State Fleming's left-hand rule.



[View Text Solution](#)

15. List three characteristic features of the electric current used in our homes.



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16. What is a fuse ? Why is it called a safety device ?



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17. Why is it necessary to earth metallic electric appliances ?



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