

F-5-Y

Roll No. _____

Total No. of Questions 18]

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XARWZJDN20

2205-Y

SCIENCE

(Physics, Chemistry and Life Science)

Time : 3 Hours]

[Maximum Marks : 84

Section-A

(PHYSICS)

(Long Answer Type Questions)

1. While dealing with the reflection of light by spherical mirrors, we shall follow a set of sign conventions called New Cartesian Sign convention. Write down five sign conventions and draw the relative diagram.

Or

Describe refraction through a rectangular glass slab. Write down the laws of refraction of light. Also draw the diagram.

(Short Answer Type Questions)

2. Describe Myopia and Hyper-matropia with relevant diagrams.

Or

Why do Stars twinkle ? Why does sun appear reddish early in the morning ?

3. (a) An electric bulb is connected to a 220 V generator. The current is 0.50 A. What is the power of the bulb ?

(b) How much work is done in moving a charge of '20' across two points having P.D 12 V ?

OR

(a) Iron has electrical resistivity of $10.0 \times 10^{-8} \Omega\text{m}$ and mercury has electrical resistivity of $94.0 \times 10^{-8} \Omega\text{m}$, which is a better conductor and why ?

(b) Why are coils of electric toasters and electric irons made of an alloy rather than a pure metal ?

4. Explain principle and working of an electric motor. Draw a labelled diagram

Or

(a) State Fleming's Left-hand rule.

(b) What is the role of split rings in an electric motor?

5. Missing

6.

(i) Missing

(ii) Missing

(iii) The S.I. unit of electric charge is :

(A) Watt 'W'

(B) Coulomb 'C'

(C) Volt 'V'

(D) None of these

(iv) Which of the following is not an example of a biomass energy source ?

(A) Wood

(C) Nuclear energy

(B) Gobar gas

(D) Coal

Section-B

(CHEMISTRY)

(Long Answer Type Questions)

7. Explain the formation of scum when hard water is treated with soap. Why does micelle formation take place ? When soap is added to water?

Or

(a) What is homologous series ? Explain with an example.

(b) What is Hydrogenation ?

(Short Answer Type Questions)

8. What do you mean by Precipitation reaction ? Explain by giving examples.

Or

What do you mean by exothermic and endothermic reactions ? Give examples for both.

9. Write electronic configuration of Nitrogen and Phosphorous belonging to group 15 of periodic table. Which of these will be more electronegative ? Why ?

Or

Compare and contrast the arrangements of elements in Mendeleev's periodic table and Modern periodic table.

(a) Define the following terms :

(i) Ore

(ii) Mineral

(iii) Gangue

(b) Name two metals that are found in nature in the free state.

Or

What are amphoteric oxides ? Give two examples of amphoteric oxides.

(Very Short Answer Type Questions)

11. (i) Draw the structures of cyclohexane (C_6H_{12}) and Benzene (C_6H_6).

(ii) Why does dry HCL gas not change the colour of the dry litmus paper ?

(iii) What is a neutralisation reaction ? Give an example.

(Multiple Choice Questions)

12. (i) A solution reacts with crushed egg-shells to give CO_2 , gas that turns lime water milky. The solution contains :

(A) NaCl

(B) HCl

(C) LiCl

(D) KCl

(ii) An alloy is a homogenous mixture of two or more:

(A) Metals

(B) A metal and a non-metal

(C) Non-metals only

(D) Both (A) and (B)

(iii) Which of the following pairs will give displacement reaction?

(A) NaCl solution and copper metal

(B) MgCl_2 solution and aluminium metal

(C) FeSO_4 solution and silver metal

(D) AgNO_3 solution and copper metal

(iv) $2\text{AgCl}(\text{s}) \xrightarrow{\text{Sunlight}} 2\text{Ag}(\text{s}) + \text{Cl}_2(\text{g})$ is a :

(A) Displacement reaction

(B) Decomposition reaction

(C) Oxidation reaction

(D) None of these

Section-C

(LIFE SCIENCE)

(Long Answer Type Questions)

13. Describe the process of excretion in human beings. Draw the structure of excretory system.

Or

(a) How is food transported in plants ?

(b) How are water and minerals transported in plants ?

(Short Answer Type Questions)

14. What is reflex action ? What is the role of brain in reflex action ?

Or

What are plant hormones? How do auxins promote the growth of a tendril around a support? <https://www.jkboseonline.com>

15. (a) Why is vegetative propagation practiced for growing some types of plants ?

(b) How will an organism be benefited if it reproduces through spores ?

Or

Describe fragmentation and regeneration in detail.

16. What are trophic levels ? Give an example of food chain and state the different trophic levels in it.

Or

How can you help in reducing the problems of waste disposal ? Give any two methods.

(Very Short Answer Type Questions)

(i) Why should we conserve forests and wildlife?

(ii) What factors could lead to rise of a new species ?

(iii) How does the creation of variations in a species promote survival ?

(Multiple Choice Questions)

18. (i) The male reproductive part of a flower that produces pollen grains is called :

(A) Ovary

(B) Stamen

(C) Stigma

(D) Style

(ii) The embryo gets nutrition from mother's blood with the help of special tissue called

(A) Placenta

(B) Oviduct

(C) Uterus

(D) Ovary

(iii) Deforestation generally decreases :

(A) Soil erosion

(B) Drought

(C) Global warming

(D) Rainfall

(iv) Non-conventional source of energy is

(A) Coal

(B) Wood

(C) Petroleum

(D) Bio-gas and solar energy