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III

Total No. of Questions : 21
Total No. of Printed Pages : 3

Regd. No.

Part - III
CHEMISTRY, Paper - I
(English version)

Time : 3 Hours] ***[Max. Marks : 60***

Note : Read the following instructions carefully.

(i) Answer **all** the questions of **Section-A**. Answer **ANY SIX** questions in **Section-B** and **ANY TWO** questions in **Section-C**.

(ii) In **Section-A**, questions from Sr. Nos. **1** to **10** are of *Very short answer type*. Each question carries **TWO** marks. Every answer may be limited to two or three sentences. Answer all these questions at one place in the same order.

(iii) In **Section-B**, questions from Sr. Nos. **11** to **18** are of *Short answer type*. Each question carries **FOUR** marks. Every answer may be limited to 75 words.

(iv) In **Section-C**, questions from Sr. Nos. **19** to **21** are of *Long answer type*. Each question carries **EIGHT** marks. Every answer may be limited to 300 words.

(v) Draw labelled diagrams wherever necessary for questions in **Section - B** and **Section - C**.

SECTION - A

10×2=20

Note :- *Answer* ***all*** *the questions.*

1. What are the coordination numbers of NaCl and CsCl crystals ?

2. What is the hybridisation of central atom in PCl_5 molecule ? What is the shape of the molecule ?

3. What is Boltzmann Constant ? Give its value.

4. What volume of CO_2 is liberated at STP by heating 4 gram of $CaCO_3$?

5. Write any two uses of Heavy Water.

6. In which segment of the atmosphere Ozone is present ? What is the advantage of Ozone Layer ?

7. What is Threshold Limit Value (TLV) ?

8. What are Ultramarines ? Give example.

9. How is Ethylene prepared from Ethyl alcohol ? Write equation.

10. Write the functional isomers of molecular formula C_3H_6O.

SECTION - B

6×4=24

Note :- *Answer* ***ANY SIX*** *questions.*

11. Write any four postulates of 'Kinetic molecular theory' of gases.

12. Explain the electrolytic method of preparation of Hydrogen peroxide. Give diagram. Write electrode reactions.

13. What is Water gas ? How is it prepared ?

14. Explain the preparation of Sodium hydroxide by Nelson Cell method. Draw diagram.

15. Explain sp^3 hybridization with example.

16. Explain the structures of XeF_4 and XeF_6.

17. Balance the following equation by Ion-electron method.

$$H_2SO_{4(aq)} + HBr_{(aq)} \rightarrow SO_{2(g)} + Br_{2(g)}$$

18. What is Moissan Boron ? How Boron reacts with the following ?

Write equations.

(a) SiO_2

(b) Conc. H_2SO_4

SECTION - C

2×8=16

Note : *Answer* ***ANY TWO*** *questions.*

19. *(a)* Write the postulates of Bohr's Atomic Model.

(b) Explain de Broglie's hypothesis and how it justifies Bohr's atomic theory.

20. Define First and Second Ionization Potentials. Why the second ionisation potential is greater than first ionisation potential ? Explain any four factors that affects the ionisation potential of elements.

21. Give any two methods of preparation of Acetylene. Give equations. How does acetylene reacts with the following ? Write equations.

(a) H_2O / Hg^{2+} (30% H_2SO_4)

(b) Ozone