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II

Total No. of Questions : **21**
Total No. of Printed Pages : **2**

Regd. No.

Part - III
CHEMISTRY - PAPER - I
(English Version)

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

Note : *Read the following instructions carefully :*

i) *Answer all questions of Section-A. Answer any six questions out of eight questions from Section-B and any two questions out of three questions from 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 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

Note : Answer *all* questions. **10x2=20**

1. Define Normality.

2. State Hess's law of constant Heat Summation.

3. How many times methane diffuses faster than Sulphur dioxide ?

4. Write the conjugate acid and conjugate base of each of the following :

(a) OH^- (b) HCO_3^-

5. Define the term Hydride. Name the three types of Hydrides.

6. What is Plaster of paris ? Write its uses.

7. What happens when $Mg(NO_3)_2$ is heated ? Give the balanced equation.

8. Why does BF_3 behave as a Lewis acid ?

9. Explain why atomic radius of Ga is less than that of Al.

10. Write Wurtz reaction.

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SECTION - B

Note : Answer *any six* questions. **6x4=24**

11. State Fajan's rules, and give suitable examples.

12. Explain the hybridization involved in PCl_5 molecule.

13. A carbon compound contains 12.8% carbon, 2.1% hydrogen, 85.1% bromine. The molecular weight of the compound is 187.9. Calculate the molecular formula.

14. Deduce (a) Charle's law and (b) Dalton's law from kinetic gas equation.

15. What is Lechatelier's principle ? Explain the effect of Temperature and Pressure on the industrial synthesis of Ammonia.

16. What is the cause for the permanent Hardness of water ? Explain Calgon method for the removal of Hardness of water. https://www.apboardonline.com

17. Explain :

(a) Diamond has high melting point.

(b) Graphite is a good conductor.

18. Explain the following :

(a) Entropy

(b) Standard enthalpy of formation

SECTION - C

Note : Answer *any two* questions. **2x8=16**

19. What are the postulates of Bohr's model of hydrogen atom ? Discuss the importance of this model to explain various series of line spectra in hydrogen atom.

20. Define IE_1 and IE_2. Why is $IE_2 > IE_1$ for a given atom ? Discuss the factors that effect IE of an element.

21. (a) What is Geometrical isomerism ? Draw cis and trans isomers of the following compounds.

(i) $CHCl = CHCl$ (ii) $C_2H_5CCH_3 = CCH_3C_2H_5$

(b) How do we get Benzene from acetylene ? Explain Nitration and Alkylation of Benzene.