

Total No. of Questions—21

Total No. of Printed Pages—3

Regd. No.

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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 'very short answer type'. Each question carries TWO marks. Every answer may be limited to 2 or 3 sentences. Answer ALL these questions at one place in 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 questions.

1. Name the major particulate pollutants present in troposphere.
2. Why is KO_2 paramagnetic ?

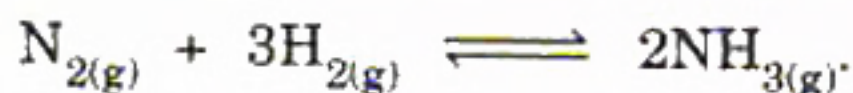
3. What is closed system ? Give example.
4. Calculate kinetic energy (in SI units) of 4 g of Methane at -73°C .
5. What is PAN ? What effect is caused by it ?
6. Describe the important uses of Quicklime.
7. State Le-Chatelier's principle.
8. Define Normality.
9. State Hess law.
10. Write the I.U.P.A.C. names of the following compounds :
 - (a) $(\text{CH}_3)_3\text{CCH}_2\text{C}(\text{CH}_3)_3$
 - (b) $\text{CH}_2 = \underset{\text{CH}_3}{\text{C}} - \text{CH}_3$

SECTION B

6×4=24

Note :— Answer any SIX questions.

11. Define sp^2 Hybridisation. Explain the structure of Ethylene (C_2H_4).
12. Write the postulates of kinetic molecular theory of gases.
13. How does Diborane react with the following :
 - (a) CO
 - (b) NH_3 .
14. What is meant by Bond order ? Calculate the bond orders in the following :
 - (a) N_2
 - (b) O_2^+ .
15. 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.
16. Derive the relation between K_p and K_c for the equilibrium reaction :



17. Write any *two* oxidising and *two* reducing properties of H_2O_2 with equations.
18. (a) SiF_6^{-2} is known while SiCl_6^{-2} is not. Explain.
- (b) Diamond has high melting point. Why ?

SECTION C

2×8=16

Note :— Answer any TWO questions.

19. What are Quantum Numbers ? Explain the significance of Quantum Numbers.
20. Define IE_1 and IE_2 . Why $\text{IE}_2 > \text{IE}_1$ for a given atom ? Discuss the factors that affect IE of an element.
21. (a) Describe any *two* methods of preparation of Benzene with corresponding equations.
- (b) How benzene reacts with the following :
- (i) $\text{CH}_3\text{Cl}/\text{Anhy. AlCl}_3$
- (ii) H_2/Ni .