

Chemistry (Theory)

[Time allowed: 3 hours]

[Maximum marks:70]

General Instructions:

- (i) All questions are compulsory.
- (ii) Marks for each question are indicated against it.
- (iii) Question number **1** to **8** are very short-answer questions and carry **1** mark each.
- (iv) Question number **9** to **18** are short-answer questions and carry **2** marks each.
- (v) Question number **19** to **27** are also short-answer questions and carry **3** marks each.
- (vi) Question number **28** to **30** are long-answer questions and carry **5** marks each.
- (vii) Use Log Tables, if necessary. Use of calculators is not allowed.

Q1. What are n-types semiconductors? **1**

Ans. The semiconductor whose increased conductivity is a result of negatively-charged electrons is called an *n*-type semiconductor. These are generated when the crystal of a group 14 element such as Si or Ge is doped with a group 15 element such as P or As.

Q2. Define 'peptization'. **1**

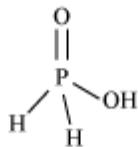
Ans. Peptization is the process of conversion of a precipitate into a colloidal sol by shaking it with the dispersion medium in the presence of an electrolyte. The electrolyte used in this reaction is known as a peptizing agent.

Q3. How is copper extracted from a low grade ore of it? **1**

Ans. Copper is extracted by hydrometallurgy from low grade ores.

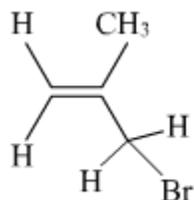
Q4. What is the basicity of H_3PO_2 acid and why? **1**

Ans. The H_3PO_2 contains one ionizable H-atom which is present as $-\text{OH}$ group. Hence, it is monobasic. The structure of H_3PO_2 is as follows:



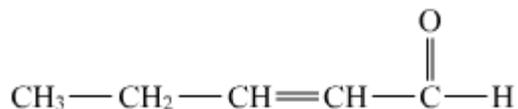
H_3PO_2 (Hypophosphorous acid)

Q5. Write the IUPAC name of the following. **1**



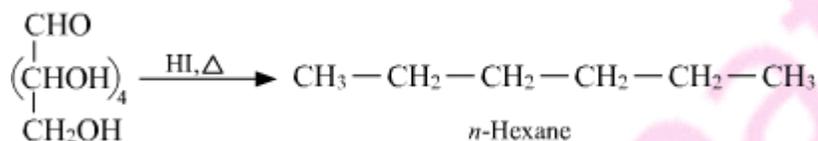
Ans. 3-bromo-2-methylpropene

Q6. Write the IUPAC name of the following. **1**



Ans. Pent-2-en-1-al

Q7. Write a reaction which shows that all the carbon atoms in glucose are linked in a straight chain. **1**



Ans.

Q8. What is the cause of a feeling of depression in human beings? Name a drug which can be useful in treating this depression. **1**

Ans. Depression is caused due to low level of adrenaline.
Anti-depressant drugs are needed to counteract the effect of depression. One such drug is Iproniazid.