

Total Time: 3:00 Hours

EXM-12th (CHE-1-2020)
CHEMISTRY (Part-II)

Total Marks: 75

Note: There are three sections in this paper i.e. A, B & C.

Time Allowed: 20 Minutes

"Section-A"

VERSION: A

Marks: 15

Choose the correct option i.e. A, B, C, or D.

1. The element of group-IA which reacts slowly with water is:
☐ A Lithium ☐ B Sodium ☐ C Potassium ☐ D Rubidium
2. The element of group-IIA which does not react with water even at red heat is:
☐ A Beryllium ☐ B Magnesium ☐ C Calcium ☐ D Strontium
3. CCl_4 does not react with water due to bulky nature of:
☐ A Carbon atoms ☐ B Chlorine atoms ☐ C Dry ☐ D Hydrogen atoms
4. The expected geometry for a coordination number of 6 is most:
☐ A Tetrahedral ☐ B Square planar ☐ C Octahedral ☐ D Linear
5. The example of functional group is:
☐ A CH_3 ☐ B $-\text{OH}$ ☐ C CH_2 ☐ D H_2
6. Stereoisomers differ from each other in respect of:
☐ A Composition ☐ B Constitution ☐ C Stereo hindrance ☐ D Four ways
7. A covalent bond can undergo fission in:
☐ A One way ☐ B Two ways ☐ C Three ways ☐ D Four ways
8. A single step nucleophilic substitution reaction is:
☐ A $\text{S}_{\text{N}}1$ ☐ B $\text{S}_{\text{N}}2$ ☐ C $\text{S}_{\text{N}}1$ ☐ D $\text{S}_{\text{N}}2$
9. The IUPAC name of ethylene glycol is:
☐ A Ethane-1,2-diol ☐ B Ethane ☐ C Ethene-1,2-diol ☐ D Ethyne-1,2-ol
10. The reactive site of alcohols is:
☐ A Alkyl group ☐ B Functional group ☐ C Vinyl group ☐ D Tautomerism
11. Ketones containing five or more carbon atoms exhibit:
☐ A Chain isomerism ☐ B Conformation isomerism ☐ C Metamerism ☐ D Tautomerism
12. Butyric acid and isobutyric acid are:
☐ A Chain isomers ☐ B Position isomers ☐ C Functional group isomers ☐ D Metamers
13. The optimum temperature for most animal enzymes is:
☐ A 31°C ☐ B 33°C ☐ C 35°C ☐ D 37°C
14. Lipids in water are:
☐ A Soluble ☐ B Insoluble ☐ C Partially soluble ☐ D Sparingly soluble
15. The initiator in the polymerization of vinyl chloride (PVC) is:
☐ A Phenyl chloride monomer (PCM) ☐ B Aryl chloride monomer (ACM) ☐ C Alkyl chloride monomer (ACM) ☐ D Alkyl chloride monomer (ACM)
16. SO_2 reacts with oxygen in the presence of rain water to produce:
☐ A Smog ☐ B Industrial smog ☐ C Acid rain ☐ D Fog
17. The air pollution is caused by:
☐ A Carbon dioxide ☐ B Carbon monoxide ☐ C Carbon soot ☐ D Carbonic acid
18. A highly sensitive instrumental technique is:
☐ A UV/visible spectroscopy ☐ B IR spectroscopy ☐ C NMR spectroscopy ☐ D Mass spectroscopy



Total Time: 2:40 mins

Total Marks: 67

Marks: 40

EXM-12^o (CHE-1-2024)
CHEMISTRY (Part-II)

"Section-B"



Write short answers of any TEN (10) of the following parts. All parts carry equal marks.

- Q1. What are oxides? Give two examples. Write the chemical formulas of the oxides of (i) a first period element. Also, mention the physical states of these oxides.
- Q2. Write the complete and balanced chemical reactions of the following with water. / (i) SO_2 (ii) the oxides of product formed in each case. (i) dichlorine monoxide (ii) silicon tetrachloride (iii) phosphorus pentoxide (iv) magnesium oxide
- Q3. Define polarizing power and polarizability. Why does the stability of Group 1A elements decrease down the group?
- Q4. Define destructive distillation of coal. Why is coal heated in the absence of air? Mention two destructive distillation products.
- Q5. Write the structures of the following: (i) 2,3-dimethylpentane (ii) 2,3,4-trimethylpentane (iii) 2,2,3-trimethylhexane (iv) 3-ethyl-2-methylpentane
- Q6. What is hydrohalogenation? Explain the addition of HBr to propene with balanced chemical equations.
- Q7. What are the Grignard's reagents? Write the reaction of ethylmagnesium bromide with formaldehyde and acetaldehyde. Also give the names of the products.
- Q8. Define chlorination of benzene. How is chlorobenzene prepared from benzene? Give complete and balanced chemical equation.
- Q9. Write the reaction of the following: (i) acid hydrolysis of methyl cyanide (ii) base-catalyzed hydrolysis of methyl cyanide
- Q10. What are oligosaccharides? How are they classified? Give one example of each type.
- Q11. Describe fractional distillation of air.
- Q12. Define NMR spectroscopy. What type of sample is placed in a strong magnetic field? What does it provide? Describe what happens when a sample is placed in a strong magnetic field.
- Q13. What is spectroscopy? Describe its three parts. What is it used to analyze substances.

"Section-C"

Marks: 27

Answer any THREE (3)

carry equal marks.

- Q14 (a) Define reducing agent. Do halides ions act as reducing agents in redox reactions. (15)
- (b) What is coordination number of a central metal ion? Give an example. Determine the coordination number of central metal ion and expected geometry of the following: (i) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ (ii) $[\text{CoCl}_4]^{2-}$ (15)
- Q15 (a) What is the mechanism of the reaction of alkynes? Explain with chemical equation how are alkynes prepared from this reaction? Also mention reaction condition. (15)
- (b) Write the mechanism of the reaction of alkynes in four steps. (15)
- Q16 (a) Explain with complete and balanced chemical equations the reactions of ethyne with the following: (i) concentrated nitric acid (ii) propyne (15)
- (b) Explain the mechanism of the reaction of ethyne with the following: (i) concentrated nitric acid (ii) propyne (15)
- Q17 (a) What is photometry? Explain its working principle. How is the concentration of an unknown solution calculated? How is it used for the determination of metals in soil samples? (15)
- (b) What is ozone layer? Mention its location in the atmosphere. Describe how does ozone layer absorb harmful ultraviolet (UV) radiation from the sun. (15)