

(6 pages)

Reg. No. : .....

Code No. : 10450 E

Sub. Code : CACH 11

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

First/Third Semester

Chemistry — Allied

ALLIED - CHEMISTRY — I

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Hybridization involves?

- (a) mixing of atomic orbitals centred on the same atom
- (b) mixing of atomic orbitals centred on the different atom
- (c) addition of an electron to an atom
- (d) addition of an electron pair to an atom

2. The bond order of  $N_2$  molecule is \_\_\_\_\_

- (a) 1.5
- (b) 2
- (c) 2.5
- (d) 3

3. The order of stability of carbonium ions is

- (a) tertiary > secondary > primary
- (b) secondary > tertiary > primary
- (c) primary > secondary > tertiary
- (d) primary > tertiary > secondary

4. Which species represents the electrophile in aromatic nitration?

- (a)  $NO_2^-$
- (b)  $NO_2^+$
- (c)  $NO_2$
- (d)  $NO_3^-$

5. The total pressure of a mixture of two gases is equal to \_\_\_\_\_

- (a) sum of their partial pressure
- (b) the difference in partial pressure
- (c) the product of partial pressure
- (d) the ratio of the partial pressures



6. NaCl is an example of \_\_\_\_\_
- (a) Ionic compounds
  - (b) Covalent compounds
  - (c) Metallic compounds
  - (d) Molecular compounds
7. Which of the following substances is used for making a blue glass \_\_\_\_\_
- (a) CuO
  - (b)  $\text{CuCO}_3$
  - (c)  $\text{CuSO}_4$
  - (d) CoO
8. T.N.T. is \_\_\_\_\_
- (a) 2,4-dinitrotoluene
  - (b) 1,2,3-trinitrotoluene
  - (c) 2,4,6-trinitrotoluene
  - (d) 3,4,6-trinitrotoluene
9. Sulpha drugs are used for \_\_\_\_\_
- (a) Precipitating bacteria
  - (b) Removing bacteria
  - (c) Decreasing the size of bacteria
  - (d) Stopping the growth of bacteria

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10. Antipyretics are medicinal compounds which \_\_\_\_\_
- (a) lower body temperature
  - (b) relieve pain
  - (c) control malaria
  - (d) can kill other organisms

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).  
Each answer should not exceed 250 words.

11. (a) Draw the Molecular orbital diagram of  $\text{O}_2$  molecule.
- Or
- (b) Explain the sp hybridisation with suitable example.
12. (a) Explain Homolytic and Heterolytic cleavage with example.
- Or
- (b) Explain substitution reaction with specific example.

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[P.T.O.]



13. (a) Compare gases and liquid state.

Or

(b) Explain intrinsic semiconductors.

14. (a) Write a note on setting of cement.

Or

(b) Explain the preparation and chemistry of T.N.T.

15. (a) How is sulphadiazine prepared? Give its mode of action and uses.

Or

(b) Discuss the cause and treatment of diabetes.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain molecular orbital theory.

Or

(b) Explain  $sp^2$  and  $sp^3$  hybridisation with suitable example.

17. (a) Explain the formation and properties of free radical.

Or

(b) Explain different types of elimination reaction.

18. (a) Derive Vander-Waals gas equation.

Or

(b) Explain different types of crystallographic system.

19. (a) Briefly explain the manufacture of glass.

Or

(b) Describe the wet process and dry process for the manufacture of cement.

20. (a) Explain the following terms with an example

(i) Analgesics

(ii) Antipyretics

(iii) Local anaesthetics.

Or

(b) Discuss the cause and treatment of cancer.

