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 — $(10 \times 1 = 10 \text{ marks})$

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)	_	
	(c) 2.5	(d)	3	

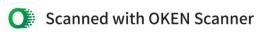
- 3. The order of stability of carbonium ions is
 - (a) tertiary > secondary > primary
 - (b) secondary > tertiary > primary
 - (c) primary > secondary > tertiary
 - (d) primary > tertiary > secondary
- 4. Which species represents the electrophile in aromatic nitration?
 - (a) NO_2^-

(b) NO_2^+

(c) NO₂

- (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

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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———	r
	(a) CuO (b) CuCO ₃	
	(c) 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 —
$$(5 \times 5 = 25 \text{ marks})$$

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

11. (a) Draw the Molecular orbital diagram of O₂ molecule.

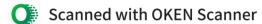
Or

- (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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13. (a) Compare gases and liquid state.

 $O_{\mathbf{r}}$

- (b) Explain intrinsic semiconductors.
- 14. (a) Write a note on setting of cement.

 $O_{\mathbf{r}}$

- (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 — $(5 \times 8 = 40 \text{ marks})$

Answer ALL questions choosing either (a) or (b). Each answer should not exceed 600 words.

16. (a) Explain molecular orbital theory.

Or

(b) Explain sp² and sp³ hybridisation with suitable example.

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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.

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