(6 pages) Reg. No. : .....

Code No. : 10744 E **Sub. Code : EMCH 21**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2024.

Second Semester

Chemistry – Core

GENERAL CHEMISTRY – II

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The pH of 0.01 M NaOH solvation is _____

(a) 12 (b) 2

(c) 7 (d) 14

2. Which of the following is the weakest acid?

(a) CH_3COOH (b) $\begin{matrix} CH_2 - COOH \\ | \\ Cl \end{matrix}$

(c) HCl (d) HNO_3

3. The size of lithium is much _____ than the other alkali metals.

(a) greater

(b) smaller

(c) greater and smaller

(d) none of these

4. The hybridisation of B-atom is B_2H_6 is _____

(a) Sp^2 (b) Sp^3

(c) Sp (d) Sp^3d^2

5. The hybridisation in IF_7 is _____

(a) Sp^3d (b) Sp^3d^3

(c) Sp (d) Sp^2

6. NH_3 is a _____

(a) soft acid (b) hard base

(c) hard acid (d) soft base

7. In Diel's – Alder reaction an alkene reacts with _____

(a) Alkane

(b) Alkyne

(c) Conjugated diene

(d) Violated diene

8. In E_1 – elimination reaction, the reaction follows

(a) First order kinetics

(b) Primary isotope effect

(c) The rearrangement

(d) All the above

9. Benzene is _____ in nature.

(a) Aromatic (b) Non-aromatic

(c) Anti-aromatic (d) All the above

10. _____ stated that the presence of delocalised π –electrons in a flat or nearly flat cyclic system is the cause of aromaticity.

(a) Benzenoid (b) Huckel

(c) Friedal (d) Wurtz

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Discuss the lewis concept of acids and bases.

Or

(b) Give the uses of acid – base indicators.

12. (a) Explain the preparation and uses of Na_2CO_3.

Or

(b) Describe the extraction of Aluminium.

13. (a) Write the preparation, hybridisation and shape of BrF_5.

Or

(b) Write short note on :

(i) Caro's acid

(ii) Marshall's acid.

14. (a) Explain Markownikoff rule with an example.

Or

(b) Compare 1, 2 and 1, 4 addition reaction of 1, 3-butadiene.

15. (a) Explain Haworth Synthesis for Naphythalene.

Or

(b) Write about the Elbs Synthesis reaction for anthracene.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Derive the Henderson–Hasselbalch equation.

Or

(b) Define the following :

(i) pH Scale

(ii) Commonion effect

(iii) Degree of dissociation.

17. (a) Write any three properties of

(i) NaOH

(ii) KBr

(iii) $KClO_3$.

Or

(b) Discuss the structure of diborane.

18. (a) Explain in detail about clathrate compounds.

Or

(b) Define the following with an example :

(i) Pseudohalogens

(ii) Interhalogen compounds.

19. (a) Give an account of Baeyer's Strain theory.

Or

(b) Explain Hoffmann and Saytzeff rules with an example.

20. (a) Explain Diels – Alder reaction with an example.

Or

(b) Give any three properties of Naphthalene.

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