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Reg. No. :

Code No. : 30759 E Sub. Code : EMCH 21

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 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.

- The pH of 0.001 M HCl is _____
(a) 0 (b) 1
(c) 2 (d) 3
- On the addition of small amount of an acid or a base, the pH value of a buffer solution _____
(a) increases (b) decreases
(c) remains unaltered (d) none of these

- Predict the correct statement
(a) Lithium is harder than other group I metals
(b) Lithium does not react with oxygen
(c) Lithium hydroxide is more basic
(d) Lithium does not form a nitride Li_3N
- Borazine is a _____
(a) Liquid (b) Solid
(c) Gas (d) Coloured gas
- The structure of XeOF_4 is _____
(a) Square pyramidal (b) Tetrahedral
(c) Octahedral (d) Planar
- An example of interhalogen compound is _____
(a) Cl_2 (b) Br_2
(c) I_2 (d) IF_7
- The structure of 1, 2-butadiene is _____
(a) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
(b) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH}_3$
(c) $\text{CH}_3 - \text{CH} = \text{CH}_2$
(d) $\text{CH}_2 = \text{CH} - \underset{\text{Cl}}{\text{CH}} - \text{CH}_3$

8. Acidity of acetylene is due to _____.
- (a) more s character
 - (b) more p character
 - (c) more sp^3 character
 - (d) none of these
9. The catalyst used in Friedal Crafts reaction is _____.
- (a) anhy. $AlCl_3$
 - (b) Cl_2
 - (c) Fe
 - (d) Cu
10. Which of the following is the nitrating reagent?
- (a) HNO_3
 - (b) HCl
 - (c) H_2SO_4
 - (d) $HNO_3 + H_2SO_4$

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss Lowry-Bransted acid base theory.

Or

- (b) Explain the following :
- (i) Degree of hydrolysis
 - (ii) Degree of Dissociation.

12. (a) What are the alloys of Al and explain them.

Or

- (b) Write the preparation and uses of $KClO_3$.

13. (a) Discuss the preparation, hybridisation and shape of IF_7 .

Or

- (b) Write short notes on Clathrate compounds.

14. (a) Discuss Saytzeff's rule with an example.

Or

- (b) Explain why 1, 4-Butadiene is more stable than 1, 2-Butadiene.

15. (a) Explain the mechanism of nitration in benzene.

Or

- (b) Discuss on the Haworth Synthesis for naphthalene.

PART C — (5 × 8 = 40 marks)

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

16. (a) Explain :
- (i) Buffer solution
 - (ii) pH scale
 - (iii) Ionic product of water.
- Or
- (b) Derive Henderson-Hasselbalch equation.
17. (a) Discuss about anomalous behaviour of Be.
- Or
- (b) Explain in detail the structure and preparation of Borazine.
18. (a) Write the structure and any two preparation for (i) XeF_2 (ii) XeF_6 .
- Or
- (b) Write short notes on :
- (i) Interhalogen compounds
 - (ii) Pseudohalogens.

19. (a) Discuss briefly E_1 , and E_2 mechanism of elimination.

Or

- (b) Explain Hoffmann's rule and Kharasch effect.
20. (a) State Huckel's rule. Explain the mechanism of sulphonation in benzene.

Or

- (b) Explain :
- (i) Diel's Alder reaction
 - (ii) Elbs reaction.