Reg. No. : ....

Name : ....

II Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2023
(2019 Admission Onwards)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY

2C02CHE/PCH : Chemistry (For Physical and Biological Sciences)

Time : 3 Hours   Max. Marks : 32

SECTION – A

Very short answer type. **Each** carries **1** mark. Answer **all 5** questions.

1. Write the expression for the equilibrium constant for the reaction,
   $\frac{1}{2}N_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons NO(g)$.

2. If K_p and K_c are the equilibrium constants of a reaction, $aA + bB \rightleftharpoons cC + dD$, in terms of molar concentrations and in terms of partial pressures in terms of partial pressures respectively, write relation between them.

3. For each photon of light absorbed by a chemical system, only one molecule is activated for subsequent reaction. This law is known as _____.

4. What type of colloids does milk belong to ?

5. Define normality.   (5×1=5)

SECTION – B

Short answer type. **Each** carries **2** marks. Answer **4** questions out of **6**.

6. What is meant by homologous series ? Give an example that illustrating this.

7. What is law of Mass action ? Write its mathematical expression for the general reaction, $aA + bB \rightarrow cC + dD$.

8. Give the IUPAC names of the following compounds.

   A   B
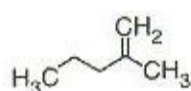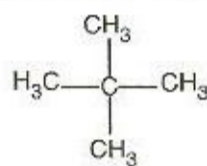
9. What is Beer Lambert Law ? Write the equation for absorbance of a solution in terms of concentration and pathlength.

P.T.O.

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10. Differentiate between error and precision.

11. Determine the molarity of a solution which contains 4.9 g of H_2SO_4 in 100 mL of solution.   (4×2=8)

SECTION – C

Short essay type. **Each** carries **3** marks. Answer **3** questions out of **5**.

12. Explain hybridization. Draw the shapes of the following molecules and indicate the state of hybridization of the Carbon atoms.
    a) Methane   b) Ethylene

13. Write a note on photosensitization and quenching.

14. What is Hardy-Schultz rule ? Illustrate with examples.

15. Briefly explain the applications of colloids.

16. Explain the principle of permanganometry with a suitable example.   (3×3=9)

SECTION – D

Long essay type. **Each** carries **5** marks. Answer **2** questions out of **4**.

17. Briefly explain Huckel's rule of aromaticity with suitable examples including benzenoid and non-benzenoid aromatic systems.

18. What is Le-Chatlier's principle ? Explain how it can be applied in the synthesis of ammonia according to the following reaction.
    $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) \quad \Delta H = -92.4 kJ/mol.$

19. Whar are colloids ? Explain the classification of colloids with suitable examples.

20. Describe the following terms with suitable example :
    a) Solubility product
    b) Ionic product
    c) Common ion effect.   (2×5=10)

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