K23U 1109

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2023
(2019 Admission Onwards)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4C04CHE/PCH(BS) : Chemistry (For Biological Science)

Time : 3 Hours Max. Marks : 32

Instruction : *Write only in* ***English****.*

SECTION – A

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

1. Name two essential amino acids.
2. Which is the hetero atom in thiophene ?
3. Draw the structure of Vitamin A.
4. Name the metal present in myoglobin.
5. Which enzyme catalyse the hydrolysis of starch into Maltose ? **(5×1=5)**

SECTION – B

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

6. What will be the product forms when Furan is treated with acetic anhydride in the presence of BF_3 ?
7. What is a zwitter ion ?
8. What are the pyrimidine bases present in RNA ? Draw the structures.
9. Discuss biochemistry of Zinc in biological systems.
10. How the vitamins are classified ?
11. What are anomers ? Give examples. **(4×2=8)**

P.T.O.

SECTION – C

Short Essay type. **Each** carry **3** marks. Answer **any 3** questions out of 5.

12. What is mutarotation ? Explain.
13. What are the different types of RNA ?
14. Write a brief note on enzyme deficiency diseases.
15. Explain Sorensons formal titration.
16. Draw the structures of progesterone, testosterone and cortisone. **(3×3=9)**

SECTION – D

Long Essay type. **Each** carry **5** marks. Answer **any 2** questions out of 4.

17. Explain structure and function of haemoglobin and myoglobin.
18. Discuss the different level structure of proteins.
19. How will you convert aldohexose to ketohexose and vice versa ?
20. Discuss briefly about the electrophilic substitution reaction in pyrrole. **(2×5=10)**

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K24U 0714

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2024
(2019 to 2022 Admissions)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4C04 CHE/PCH (PS) : Chemistry (For Physical Science)

Time : 3 Hours Max. Marks : 32

SECTION – A

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

1. Define RMS velocity.
2. How surface tension and viscosity are relate to intermolecular forces ?
3. Define EMF.
4. What is the size range of nanomaterials ?
5. What is Top-Down approach in nanomaterial synthesis ? **(5×1=5)**

SECTION – B

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

6. A gas occupies 12.3 liters at a pressure of 40.0 mmHg. What is the volume when the pressure is increased to 60.0 mmHg ?
7. What is Bravais lattice ? Explain Bravais lattices of cubic crystals.
8. What are liquid crystals ?
9. State and explain the Faraday's laws of electrolysis.

P.T.O.

10. The standard electrode potential of zinc ions is 0.76V. What will be the potential of a 2M solution at 300 K ?

11. What is spectrophotometry ? **(4×2=8)**

SECTION – C

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

12. Give the important postulates of Kinetic Molecular Theory of Gases.

13. NaCl has a f.c.c. structure. How many Na^+ and Cl^- ions are there in the unit cell ?

14. Addition of a non-volatile solute lowers the freezing point and elevates the boiling point of a solvent. Explain.

15. Describe the synthesis of nanomaterials by co-precipitation method with suitable example.

16. Explain the principle of TGA. **(3×3=9)**

SECTION – D

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

17. a) Write notes on liquefaction of gases.
    b) What is Joule-Thomson Effect ?

18. a) Define (i) Osmosis; (ii) Osmotic pressure; (iii) Semipermeable membrane.
    b) Explain how the molecular mass of a solute is determined by osmotic pressure measurements.

19. State and explain Kohlarausch's law with example. Give its application.

20. a) What is electro chemical series ? Give the significances with suitable examples.
    b) What is electrode potential ? Explain the measurement of single electrode potential. **(2×5=10)**

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K24U 0713

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/ Improvement) Examination, April 2024
(2019 to 2022 Admissions)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4C04CHE/PCH(BS) : Chemistry (for Biological Science)

Time : 3 Hours Max. Marks : 32

Instruction : *Write* ***only*** *in* ***English****.*

SECTION – A

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

1. Give the structure of thiophene.
2. To which nitrogeneous base does thymine form hydrogen bonds in DNA ?
3. Name the enzyme which hydrolyses proteins.
4. Which is the vitamin that contains cobalt ?
5. Write any one iron-porphyrin complex in biological system. **(5×1=5)**

SECTION – B

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

6. What is meant by inversion of sucrose ?
7. Pyridine is more basic than pyrrole. Explain.
8. What is meant by DNA replication ?

P.T.O.

9. Define the term Zwitter ion.

10. Discuss the biochemistry of zinc.

11. Write a note on nitrogen fixation. **(4×2=8)**

SECTION – C

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

12. Explain mutarotation with example.

13. What is the difference between a nucleoside and a nucleotide ?

14. Write a note on the colour reactions which serve as tests for proteins.

15. Describe the mechanism of enzyme action.

16. How does sodium-potassium pump work ? **(3×3=9)**

SECTION – D

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

17. a) Describe the conversion of glucose into fructose. **3**
    b) How will you distinguish between glucose and sucrose ? **2**

18. Justify the statements.
    a) Pyrrole is aromatic
    b) Pyridine undergoes the nucleophilic substitution at 2-position.

19. Write a note on structure of proteins.

20. Explain the classification of hormones. **(2×5=10)**

K23U 1110

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, April 2023
(2019 Admission Onwards)
COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER CHEMISTRY
4C04CHE/PCH (PS) : Chemistry (For Physical Science)

Time : 3 Hours Max. Marks : 32

SECTION – A

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

1. Define colligative property.
2. Write down the electrode reaction of Calomel electrode.
3. What is Lycurgus Cup ?
4. Define specific conductance.
5. What are Weiss indices ? **(5×1=5)**

SECTION – B

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

6. What are the factors affecting the solubility of gas in liquid ?
7. What is Nernst Equation ? Explain the terms in it.
8. How molar conductance varies with dilution ?
9. Define mean free path.
10. State Henry's Law.
11. What are the equations to find out the average velocity and RMS velocity of gases ? **(4×2=8)**

P.T.O.

SECTION – C

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

12. Define the term transport number. What are the methods to determine transport number ?

13. What are the difference between crystalline solids and amorphous solid ?

14. Define liquid crystals. What are the different types of liquid crystals ?

15. Explain the deviation of gas from ideal behaviour.

16. Explain the Maxwell distribution of velocities. **(3×3=9)**

SECTION – D

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

17. How to determine the molecular mass from osmotic pressure ?

18. What are concentration cells ? Explain the different types of concentration cells.

19. Explain potentiometric titration and mention its application.

20. Discuss the different synthetic methods of nanoparticles. **(2×5=10)**

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