D 103032 **(Pages : 2)** **Name.....**

Reg. No.....

FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2024

Chemistry

CHE 4C 04—PHYSICAL AND APPLIED CHEMISTRY

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

Answer questions up to 20 *marks.*
Each question carries 2 *marks.*

1. Distinguish between true solutions and colloidal solutions.
2. What are lyophilic colloids ? Give an example.
3. Explain 1D nanomaterials with an example.
4. What is R_f value ? How is it used in the identification of a compound ?
5. Name any *one* biodegradable polymer and write its application.
6. Give any *two* applications of nanomaterials in medicine.
7. Which are the monomers of Buna-S and Bakelite.
8. Write any *two* examples each for artificial sweeteners and permitted food colours.
9. Define octane number and cetane number.
10. What is eutrophication ?
11. What are chromophores and auxochromes ?
12. What is greenhouse effect ? Name any *two* greenhouse gases.

[Ceiling of marks : 20]

Turn over

Section B (Paragraph)

Answer questions up to 30 *marks.*
Each question carries 5 *marks*

13. Explain briefly the cleaning action of soap.

14. Differentiate between thermoplastics and thermosetting plastics.

15. What is meant by green chemistry ? Describe the principles of green chemistry.

16. Describe the principle and applications of gas chromatography.

17. Briefly explain UV-Visible spectroscopy.

18. Write a short note on the causes and effects of water pollution.

19. Explain any two methods for purification of colloids.

[Ceiling of marks : 30]

Section C (Essay)

Answer any **one** *question.*
The question carries 10 *marks.*

20. (i) Discuss the principle of NMR spectroscopy.

    (ii) Draw the NMR spectrum of ethanol and explain.

21. Briefly explain the manufacture of cement.

(1 × 10 = 10 marks)

C 41201 **(Pages : 2)** **Name.....**

Reg. No.....

FOURTH SEMESTER (CBCSS-UG) DEGREE EXAMINATION, APRIL 2023

Chemistry

CHE 4C04—PHYSICAL AND APPLIED CHEMISTRY

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

Answer questions up to 20 *marks.*
Each question carries 2 *marks.*

1. What are associated colloids ?
2. What is peptization ? Give an example.
3. What is atom economy in green chemistry ?
4. Give any two applications of nanomaterial in medicine.
5. Define R_f value in chromatography.
6. Arrange different electronic transitions in the order of increasing energy levels.
7. What is meant by finger print region ?
8. What are thermoplastics ? Give an example.
9. How is nylon-66 prepared ?
10. What is BOD ?
11. How ozone layer depletion does increases temperature of atmosphere ?
12. What is antibiotics ? Give an example.

[Ceiling of marks : 20]

Section B (Paragraph)

Answer questions up to 30 *marks.*
Each question carries 5 *marks.*

13. Write notes on electrophoresis.
14. Explain the properties of nanoparticles.
15. Mention advantages and limitations of TLC.
16. How are following prepared (a) PVC ; (b) PTFE ; (c) Polythene ?

Turn over

17. How is acid rain produced ?

18. Explain terms (a) chromophores ; (b) auxochrome. With examples.

19. How will you differentiate the following pairs of compounds by IR spectroscopy, (i) acetophenone and benzaldehyde ; (ii) ethanol and ether.

[Ceiling of marks : 30]

Section C (Essay)

Answer any **one**.
The question carries 10 *marks.*

20. (a) What is meant by chemical shift ?

    (b) Draw NMR spectrum of 1,3-dibromopropane and explain it.

    (c) What are the applications of UV spectroscopy ?

21. Write a note about manufacture of cement and glass.

(1 × 10 = 10 marks)

C 21517 **(Pages : 2)** **Name.....**

Reg. No.....

FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Chemistry

CHE 4C 04—PHYSICAL AND APPLIED CHEMISTRY

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. Define Hardy-Schulz law.
2. What is critical micelle temperature ?
3. Define green chemistry.
4. Give two applications of nanomaterial in catalysis.
5. What is the principle of chromatography ?
6. Give the structure and monomer unit of neoprene.
7. What is the condition for a molecule to be microwave active ?
8. Define finger print region.
9. How is water purified for drinking purpose ?
10. Define pollutant and pollution.
11. What is Buna-N ?
12. Give any *two* examples of natural food preservatives and artificial sweeteners.

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph)

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Give an account of applications of colloids.
14. Explain the preparation of nanoparticles in detail.
15. Mention advantages and limitations of adsorption chromatography.
16. Give an account on biodegradable polymers.
17. What is greenhouse effect ? Explain its consequences and control measures.
18. Define and give an example of antibiotics, antipyretics and analgesics.
19. Calculate following for radiation of wavelength 200 nm : wavenumber. frequency, energy per photon and energy per mol.

(5 × 5 = 25 marks)

Section C (Essay)

Answer any **one** *question.*
The question carries 11 *marks.*

20. (a) What is the principle of NMR spectroscopy ?
    (b) How will you differentiate the two isomers C_2H_6O using NMR spectroscopy ?
21. (a) Explain terms (a) Chromophore ; and (b) Auxochrome.
    (b) Discuss various theories of colour and constitution.

(1 × 11 = 11 marks)

C 3519 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2021

Chemistry

CHE 4C 04—PHYSICAL AND APPLIED CHEMISTRY

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. Why are lyophilic sols more stable than lyophobic sols ?
2. Define Gold number.
3. Write note on green solvent.
4. What is the significance of surface to volume ratio ?
5. What is meant by elution ?
6. Discuss the principle of IR spectroscopy.
7. What is bathochromic shift ?
8. What is COD ?
9. What is greenhouse effect ?
10. What is octane number ?
11. Compare LPG and CNG.
12. How are dyes classified ?

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph)

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Explain different purification techniques of colloids.
14. What is the principle of UV spectroscopy ?
15. Explain application of nanomaterial's in electronics and robotics.
16. Explain briefly TLC.
17. What are Pollutants ? How are they classified ?
18. Explain briefly different theories of dyes.
19. Define and give an example of antipyretics, analgesics, antibiotics, antacids and antiseptics.

(5 × 5 = 25 marks)

Section C (Essay)

Answer any **one** *question.*
The question carries 11 *marks.*

20. Discuss briefly different spectroscopic techniques used in the structural determination of organic molecules.
21. What are biodegradable polymers ? Explain application of biodegradable polymers.

(1 × 11 = 11 marks)