

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)

Maximum : 60 Marks

Time : Two Hours

## 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 x 3 = 24 marks)

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### 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, photon and energy per mol.

*(5 x 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 x 11 = 11 marks)*