



K24U 4009

Reg. No. :

Name :

First Semester B.Sc. Degree (C.B.C.S.S. – OBE-Supplementary/
Improvement) Examination, November 2024
(2019 to 2023 Admission)

COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER
CHEMISTRY

1C01CHE/PCH : Chemistry (For Physical and Biological Sciences)

Time : 3 Hours

Max. Marks : 32

SECTION – A

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

1. The force that allows electrons to move around the nucleus is _____
2. The hybridisation state of oxygen in water molecule is _____
3. To which block, the element with atomic number 56 belongs ?
4. The solid outer part of the earth is known as _____
5. AlBr_3 is formed by the reaction of a strong acid and a weak base. What is the nature of the solution, when this salt dissociates ? (5×1=5)

SECTION – B

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

6. What will be the uncertainty in the position of an electron (mass = 9.1×10^{-31} kg) moving at 300 ms^{-1} with an accuracy of 0.001 percent ?
7. What is the Broglie wavelength of a tennis balls of mass 60 g moving with a velocity of 10 m/s is approximately : (Planck's constant, $h = 6.63 \times 10^{-34} \text{ J s}$).
8. What is bond order ? Give bond order for B_2 molecule.

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9. Explain BOD.
10. What are the harmful effects of SO_x and NO_x ?
11. Write the Henderson equation for acidic buffer. (4×2=8)

SECTION – C

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

12. What is wave function ? Give significance of ψ^2 . Write Schrodinger equation.
13. What is lattice energy ? Give Born Lande Equation explain the terms.
14. Give shape of BF_3 , CH_4 and NH_4^+ .
15. What are the causes of ozone depletion ?
16. The molar solubility of PbBr_2 is $2.17 \times 10^{-3} \text{ M}$ at a certain temperature. Calculate K_{sp} for PbBr_2 . (3×3=9)

SECTION – D

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

17. What are quantum numbers ? Explain all four quantum numbers.
18. What is hybridization ? Explain sp^3d and sp^3d^2 hybridization with examples.
19. Write notes on :
 - a) Global warming
 - b) Greenhouse effect.
20. Write notes on :
 - a) Common ion effect and solubility product.
 - b) pH of buffer solution. (2×5=10)