



K19U3310

Reg. No. :

Name :

I Semester B.Sc. Degree CBCSS (OBE)-Regular
Examination, November - 2019
(2019 Admissions)

COMPLEMENTARY ELECTIVE COURSE IN CHEMISTRY/POLYMER
CHEMISTRY
1C01CHE/PCH : CHEMISTRY (FOR PHYSICAL AND BIOLOGICAL
SCIENCES)

Time : 3 Hours

Max. Marks : 32

Instructions : Answer **All** questions in English only.

SECTION - A

Answer **All** questions. Each question carries **1** mark. (5×1=5)

1. Calculate the de Broglie wavelength of an electron of mass 9.1×10^{-31} kg moving with a velocity 5.9×10^5 m/s.
2. The shape of BF_3 molecule is _____
3. The lowermost layer of atmosphere is the _____
4. The earth is protected from the harmful UV radiations by _____ layer.
5. Give one example for a Lewis acid.

SECTION - B

Answer any **Four** questions. Each question carries **2** marks. (4×2=8)

6. Calculate the wavelength of spectral line in the Balmer Series if $n_2=3$.
7. How can VSEPR theory explain the shape and bond angle of water molecule?

P.T.O.



8. Comment on the consequences of ozone depletion.
9. What is meant by chemical oxygen demand?
10. What are conjugate acids? Give the conjugate acids of SO_4^{2-} and OH^- .
11. What are buffer solutions? Give one example.

SECTION - C

Answer any **Three** questions. Each question carries **3** marks. **(3×3=9)**

12. Discuss the atomic spectrum of Hydrogen?
13. What is ionization potential? How is it varied along a period and down a group of the periodic table?
14. Explain on the basis of MOT why Ne_2 molecule does not exist. [At. No. of Ne is 10].
15. Define lattice energy of an ionic compound. Give the Born-Landé equation.
16. What are the important water quality parameters? Explain.

SECTION - D

Answer any **Two** questions. Each question carries **5** marks. **(2×5=10)**

17. a) What are the postulates of Bohr's atomic theory?
b) State and explain the de Broglie relation? **(4+1)**
 18. Explain the molecular geometries associated with sp^2 and sp^3 hybridizations using illustrative examples.
 19. a) Write a note on toxicity and environmental hazards of pesticides.
b) What is meant by radiation pollution? **(3+2)**
 20. a) Discuss the Lewis theory of acids and bases.
b) Indicate the Lewis acid and base in each of the following equilibria:
 - i) $\text{Ag}^+ + 2\text{CN}^- \rightarrow [\text{Ag}(\text{CN})_2]$
 - ii) $\text{SiF}_4 + 2\text{F}^- \rightarrow [\text{SiF}_6]^{2-}$ **(3+2)**
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