Nagarjuna Degree College
38/36, Ramagondanahalli,
Yelahanka Hobli, Reg. No.
Bengaluru - 560 064.

DCCH101

I Semester B.Sc. Degree Examination, May/June - 2022

CHEMISTRY

(NEP CBCS Scheme 2021-22 Onwards)

Paper - DSC - I

Time : 2½Hours   **Maximum Marks : 60**

Instructions to Candidates :

    i)   Question paper has **Three** parts, Answer **All** the parts.

    ii)   Write chemical equations and diagrams wherever necessary.

PART - A

Answer any Five of the following questions. Each question carries Two Marks.

$(5×2=10)$

1.   Write de-Broglie equation and mention the terms in it.

2.   Mention the number of significant figures in

    i)   200.01

    ii) $6.626×10^{-34}$

3.   What are f-block elements ? Write the general electronic configuration.

4.   What is a nucleophile? Give an example.

5.   Mention two precautions to be taken while handling toxic chemicals.

6.   Write the structure of 2- methyl -3- Pentyne.

PART - B

Answer any Four of the following questions Each question carries Five marks.

$(4×5=20)$

7.   What is gravimetric analysis? Discuss the general rules for quantitative determination by gravimetric method.   **(5)**

8.   a)   Mention the significance of Principal and magnetic quantum number.

    b)   Define Eigen function.   **(4+1)**

[P.T.O.

9. a) Mention the factors affecting ionisation enthalpy of elements.

   b) Why is size of a cation less than its parent atom? (3+2)

10. a) Mention the hybridisation and shape of

   i) Ethene

   ii) Ethyne

   b) What is homolytic cleavage? (4+1)

11. a) Draw the titration curve for weak acid versus strong base. Indicate the equivalence point PH.

   b) How does the acidic nature of the oxides of P-block elements vary across a period and down a group? (3+2)

12. a) State saytzeff rule Illustrate with an example.

   b) Calculate the median of the following titration results (ml)

   10.1 , 10.0, 9.9, 10.2 , 10.1 (3+2)

PART - C

Answer any Three of the following. questions Each question carries Ten marks.

(3×10=30)

13. a) What are determinate errors? Discuss different types of determinate errors.

   b) Mention the different methods of drying solids. (6+4)

14. a) Derive an expression for energy of a particle in one-dimensional box.

   b) Draw the radial probability distribution curve for 25 orbital.

   c) Explain shielding effect. (6+2+2)

15. a) Discuss the trends in the hydrides of group 13 and group 16.

   b) Between fluorine and chlorine, which has higher gain enthalpy ? Why?

   c) Write an equation to determine electronegativity by Pauling scale. (6+2+2)

16. a) Discuss the mechanism of addition of HBr to propene.

   b) Explain 1,2 and 1,4 addition of 1,3 butadiene with an example.

   c) What is antiaromaticity? Give the examples. (4+4+2)

17. a) Define ionization enthalpy. How does it vary across a period & down a group.

   b) Define

   i) Precision

   ii) Hamiltonian operator.

   c) Explain inductive effect with an example. (4+4+2)