K20U 3171

Reg. No. : .....

Name : .....

I Semester B.Sc. Degree (CBCSS – Supplementary) Examination, November 2020
(2014-2018 Admissions)
CORE COURSE IN CHEMISTRY
1B01CHE – Theoretical and Inorganic Chemistry

Time : 3 Hours Max. Marks : 40

SECTION – A

Answer **all** questions. **Each** question carries **one** mark.

1. What is mass defect ?
2. State Hunds rule.
3. What is meant by standard deviation ?
4. List the proper number of significant figures in the following :
   a) 0.00456
   b) 8.09. **(1×4=4)**

SECTION – B

Answer **any seven** questions. **Each** question carries **2** marks.

5. Explain the terms constant and proportionate error.
6. Compare the boiling points of ortho and para nitro phenols.
7. The result of an analysis is 36.97 compared with the accepted value of 37.07. What is the absolute and relative error ?
8. Write deBroglie relation and establish a relation between wavelength and kinetic energy by using this.

P.T.O.

9. Explain the term Q value in nuclear reaction. What is its significance ?

10. What is meant by artificial transmutation ? Give one example.

11. A radioactive substance decays at such a rate that after 46 days only 0.25 of its original amount is left. Calculate its decay constant and half life.

12. Explain the factors affecting lattice energy.

13. List all possible subshells and orbitals for the principle quantum number 3.

14. Write Born Lande Equation and explain the terms. **(2×7=14)**

SECTION – C

Answer **any 4** questions. **Each** question carries **3** marks.

15. Explain the uses of Born Haber cycle.

16. Describe the different methods for minimization of errors.

17. Determine the uncertainty in the velocity of moving bullet of mass 10 g, whose uncertainty in position is 1.0×10^{-5}m.

18. What are the merits of band theory ?

19. Discuss rock dating.

20. Explain the significance of quantum numbers. **(3×4=12)**

SECTION – D

Answer **any 2** questions. **Each** question carries **5** marks.

21. Discuss the principle and salient features of a nuclear reactor.

22. Write a note on the Van der waals forces.

23. Explain the terms standard deviation, confidence limit, f-test, coefficient of variance.

24. Discuss the postulates of quantum mechanics. **(5×2=10)**

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