19U122A (Pages: 2) Name: …….

Reg. No……...……

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(Supplementary/Improvement)

(CUCBCSS-UG)

CC15U CHE1 B01 - THEORETICAL AND INORGANIC CHEMISTRY - I

(Chemistry - Core Course)

(2015 to 2018 Admissions)

Time: Three Hours Maximum: 80 Marks

Section A

Answer ***all*** questions. Each question carries 1 mark.

1. An experiment is a controlled method of testing a ----------
2. What are the different isotopes of carbon?
3. The oxidation number of Cr in $K_2Cr_2O_7$ is ----------
4. Molar volume of a gas at STP is ----------
5. Name one complexometric indicator.
6. Name one isotope used in radio diagnosis.
7. The minimum frequency of electromagnetic radiation used to eject electrons from the metal surface is called ----------
8. For stability of a nucleus the N/P ratio should be in the range of ----------
9. Balmer series of spectral lines occurs in the ---------- region of electromagnetic spectrum.
10. The radiant energy of sun is due to nuclear ----------

(10 x 1 = 10 Marks)

Section B

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

11. What is meant by a scientific hypothesis?
12. Calculate the normality of a solution containing 80g of NaOH in 4L.
13. What are isobars? Explain with example.
14. Suggest a remedy for burns due to phenol and bromine.
15. Explain the term packing fraction.
16. What is Heisenberg's uncertainty principle?
17. What is Group displacement law?
18. Calculate the wave length of an electron accelerated to a potential of 10,000 volts.
19. What is photoelectric effect?

20. Write any four limitations of Bohr theory.

21. Explain K electron capture with example.

22. Differentiate between primary and secondary standard.

(10 x 2 = 20 Marks)

Section C (Paragraph)

Answer any ***five*** questions. Each question carries 6 marks.

23. Distinguish between molality, and mole fraction.

24. Explain the theory of acid base indicators and adsorption indicators.

25. Write a short note on radiocarbon dating.

26. Derive the de Broglie relation.

27. Explain the principle of iodometric and iodimetric titrations.

28. Write brief note on the principle and advantages of double burette titration.

29. What is artificial radioactivity? What are its uses?

30. Explain the role of concepts and models in science.

(5 x 6 = 30 Marks)

Section D

Answer any ***two*** questions. Each question carries 10 marks.

31. Explain the principle of nuclear fusion and nuclear fission along with its applications.

32. Discuss the different steps which lead to generalization of quantum theory.

33. What are the different components of a research project? Explain.

34. Write a short note on:

    a) Isotopes b) Isotones c) Variable valency.

(2 x 10 = 20 Marks)

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