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Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, February 2018
First Degree Programme Under CBCSS
Chemistry
CH 1131.5/CH 1131.6 : INORGANIC AND ANALYTICAL CHEMISTRY
(For Home Science and Biochemistry)
(2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. Answer in **one** word/sentence. **Each** question carries **one** mark.

1. Write the basic reaction taking place in acid-base titrations.
2. Complete the reaction $^{27}Al_{13} + {}^{4}He_{2} \rightarrow \ldots + {}^{1}H_{1}$.
3. State the oxidation state of Iron in haemoglobin.
4. Give any two examples of ionic organometallic compounds.
5. Write down the electronic configuration of chromium.
6. Name the indicator used in the titration of a strong acid with a weak base.
7. Define the unit curie.
8. Specify the region in the electromagnetic spectrum at which Lyman series occur.
9. Define an orbital.
10. What is a standard solution ?

P.T.O.

SECTION – B

Short answer type (**not** to exceed **one** paragraph). Answer **any eight** questions from the following. **Each** question carries **two** marks.

11. Write a short note on the functions of myoglobin.

12. Why hydrochloric acid is not used in the permanganometric titrations in acid medium ?

13. What is half life period of a radioactive compound ? How is it related to radioactive disintegration constant ?

14. What are carboranes ?

15. State any two advantages of neutron activation analysis over other analytical techniques.

16. 5.6 g of Potasium hydroxide is dissolved in 200 cm^3 of solution. Calculate the molarity of the solution.

17. What is a redox indicator ? Give one example.

18. State and explain Aufbaue principle.

19. Illustrate the significance of organoarsenic compounds.

20. What are eigen values ? Give it's significance.

21. How does Balmer series and Paschen series occur in the hydrogen spectrum ?

22. Distinguish between normality and molarity.

SECTION – C

Short essay (**Not** to exceed **120** words). Answer **any 6** questions from the following. **Each** question carries **four** marks.

23. What are the merits and demerits of Bohr model of atom ?

24. Explain the anomalous electronic configuration of copper.

25. What is a primary standard ? What are its salient features ?

26. What is a P^H indicator ? Explain its use in acid base titrations.

27. What is nuclear binding energy ? How is it related to nuclear stability ?

28. What is artificial transmutation ? Explain it with any two examples.

29. What are silicones ? How are they manufactured ?

30. What are organomercuric compounds ? Specify its use and hazards.

31. How is radioactivity detected by Wilson cloud chamber ?

SECTION – D

Long essay. Answer **any two** questions. **Each** question carries **fifteen** marks.

32. What are quantum numbers ? How are they related to each other ? What is the significance of each quantum number ?

33. a) What is a titration curve ? Discuss the titration curve for the neutralization of a
    i) Strong acid with a strong base
    ii) Strong acid with a weak base. **8**

    b) Outline the principle, use and advantages of permanganometric and dichrometric titrations. **7**

34. a) Write note on :
    i) Radioactive disintegration series
    ii) Pathological and genetic damages caused by nuclear radiations
    iii) Radioactive equilibrium
    iv) Mass defect. **10**

    b) Discuss the application of nuclear chemistry in medicine. **5**

35. a) What are organometallic compounds ? How are they classified ?

    b) Write a short note on organo boron and organo silicon compounds.
