FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2016
BCHE1C01 – General Chemistry

(2016 Admission onwards)

Max. Time: 3 hours   Max. Marks: 64

Section A (One word)

Answer all questions. Each question carries 1 mark

1. Hybridisation of Cl in ClF_3 is ....
2. In methaemoglobin the oxidation state of central atom is ....
3. Give example for an external indicator in dichrometry.
4. The ligand denticity of EDTA is.....................
5. The number of β particles emitted during the transformation of $_{90}Th^{232}$ to $_{82}Pb^{208}$ is
6. .... is not used as a primary standard
7. The weight of $FeSO_4$ required to prepare 1.5L of 0.3N solution is ....
8. A subshell with n=6 and l=3 is designated as ....
9. The conjugate base of H_3PO_4 is ....
10. .... can be used as an antidote for cyanide poisoning

$(10 \times 1 = 10)$

Section B (Short answer)

Answer any seven questions. Each question carries 2 marks

11. Distinguish between ionic and covalent bond.
12. Explain the applications of radio isotops in agriculture.
13. Calculate the number of atoms present in 10g of oxygen.
14. Calculate the uncertainty in position of an electron having mass 9.1×10^{-31} Kg and moving with a velocity 100ms^{-1}, if the uncertainty in momentum is 10%.
15. Give two examples for artificial transmutations.
16. F has a less negative electron gain enthalpy than Cl. Justify.
17. When NH_4Cl is dissolved in water the temperature of the system decreases. Give reason
18. Distinguish between intermolecular and intramolecular hydrogen bonding with examples.
19. Draw the structure of porphine ring system.
20. Write Schrodinger equation and explain the terms.

$(7 \times 2 = 14)$

Section C (Paragraph)

Answer any four questions. Each question carries 5 marks

21. On the basis of Bohr theory explain the formation of line spectrum of hydrogen.

22. Explain the functioning of metallochromic indicators in complexometric titrations.

23. With balanced chemical equation give examples for redox titrations and explain the term oxidizing agent.

24. Explain Na-K pump in biological system.

25. A wooden furniture shows C^{14} activity which is 40% of that of a fresh wood. Calculate the age of sample ($t_{1/2}$ of C^{14} is 5760 years).

26. Explain the shape and hybridization of SF_6 and IF_7.

$$(4 \times 5 = 20)$$

Section D (Essay)

Answer any two questions. Each question carries 10 marks

27. a) Explain the application of common ion effect and solubility product in qualitative analysis.

    (6 marks)

    b) Give note on Lewis acid - base concept. (4 marks)

28. a) Sketch the MO diagram of O_2 and CO and explain magnetic properties. (5 marks)

    b) Give brief discussion on iodimetry and iodometry. (5 marks)

29. a) Explain the principle regarding the choice of suitable indicators in acid - base titrations.

    (6 marks)

    b) Discuss the advantage of double burette method in volumetric analysis. (4 marks)

30. a) Write note on nuclear fission and fusion reactions. (5 marks)

    b) Discuss the biochemical functions of Zn and Co. (5 marks)

$$(2 \times 10 = 20)$$

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2016

BCHE1B01 – Theoretical & Inorganic Chemistry – I

(2016 Admission onwards)

Max. Time: 3 hours   Max. Marks: 80

Section A (One word)

Answer all questions. Each question carries 1 marks

1. Theory is a well-substantiated explanation of a ------------------------- .

2. A generalization drawn from observation of a number of specific cases is called a ------------- .

3. The oxidation number of S in $Na_2S_4O_6$ is ------------

4. 9 g of water constitutes ------------ mole of water molecules

5. Equivalent mass of $Mg(OH)_2$ is ------------

6. Atoms that have same number of neutrons but different mass number are called -----------

7. The active mechanism involved in its function of silica gel as dessicant is -----------

8. Titration of iodine liberated from a chemical reaction with a reducing agent is called an ----------- titration

9. According to the uncertainty principle, it is impossible to determine simultaneously the exact ----------- and momentum of a subatomic particle

10. The minimum amount of the target material required to sustain a fission chain reaction at a constant rate is called ------------

$(10 \times 1 = 10)$

Section B (Short answer)
Answer any ten questions. Each question carries 2 marks

11. Why is chemistry called the central science?

12. Name the important components of a research project report?

14. What is a redox indicator? Give an example?

15. What are R and S phrases ?

16. Calculate the molarity of a solution obtained by dissolving 4 g of NaOH in 1 L of water?

17. Define the term atomic mass and gram atomic mass. What does the term amu means?

18. Potassiun permanganate is called a self indicating reagent. Why?

19. What is photoelectric effect?

20. What is Rock dating?

21. State the group displacement law?

22. The $^{14}C/^{12}C$ ratio in a certain piece of wood is 13% that of the atmosphere. Calculate the age of wood, given half life of ^{14}C= 5580 years.

$$(10 \times 2 = 20)$$

Section C (Paragraph)
Answer any five questions. Each question carries 6 marks

23. Define the terms mass fraction and mole fraction of a component in a solution . How are these affected by a temperature change?

24. What is complexometric titration? Explain with special reference to EDTA titration?

25. Write a short note on the laboratory safety practices?

26. Discuss the atomic spectrum of hydrogen

27. Distinguish between matter wave and electromagnetic waves?

28. Explain the term radioactivity with suitable example?

29. Explain the application of tracers in establishing the mechanism of chemical reactions taking ester hydrolysis as an example?

30. Derive Bohr's equation for energy velocity and radius of hydrogen atom .

$$(5 \times 6 = 30)$$

Section D (Essay)
Answer any two questions. Each question carries 10 marks

31. Explain the principles regarding the choice of suitable indicators in different acid base titration?

32. Explain the term blackbody radiation and black body spectrum. Discuss the salient features of planck's quantum theory.

33. Explain the terms scientific concepts and scientific models and discuss their role in science.

34. Explain the principles of atom bomb and hydrogen bond. $$(2 \times 10 = 20)$$