D 73685 (Pages : 3) Name.....

Reg. No.....

FIRST SEMESTER B.Sc. DEGREE (SUPPLEMENTARY/IMPROVEMENT) EXAMINATION, NOVEMBER 2014

(U.G.–CCSS)

Core Course—Chemistry

CH 1B 01—FOUNDATIONS IN CHEMISTRY

Time : Three Hours Maximum : 30 Weightage

I. Answer all *twelve* questions. Each question carries a weightage of ¼. This part contains multiple choice, fill in the blank and one word answer questions.

1 The condensed description of observations is called :

(a) Knowledge. (b) Law.

(c) Theory. (d) Hypothesis.

2 Among the following identify the most radioactive element :

(a) U. (b) Ra.

(c) Po. (d) Th.

3 Radioactive disintegrations depend on :

(a) Temperature.

(b) Pressure.

(c) Both temperature and pressure.

(d) Nature of the nucleus.

4 Which of the following is largest ?

(a) Cl . (b) S2-.

(c) Na^+. (d) S^-.

5 Which is correct with respect to electron gain enthalpy ?

(a) F < Cl. (b) 0 > S.

(c) N > P. (d) F > Cl.

6 The formula which gives simple whole number ratio of atoms in a molecule is :

(a) Structural formula. (b) Molecular formula.

(c) Projection formula. (d) Empirical formula.

Turn over

7 The monomer of natural rubber is :

(a) Isoprene. (b) Hexamethylene diamine.

(c) Ethylene. (d) 1,3-butadiene.

8 The branch of Chemistry which deals with the separation of components from plants is :

(a) Medicinal chemistry. (b) Plant science.

(c) Phytochemistry. (d) Biochemistry.

9. Among the different isotopes of uranium which form is most radioactive _____

10 The basic principle used in Hydrogen bomb is _____

11 When we move from top to bottom in a group of a periodic table, the size of the atoms _____

12 Carbon forms millions of compounds by combining with itself and also with other elements due to its _____ power.

(12 x ¼ = 3 weightage)

II. Answer all *nine* questions. Each question carries a weightage 1. Answers may be in one *or* two sentences.

13 What do you mean by pseudo-science ?

14 Biofuels from plant derived materials like starch and sugars are not advisable. Why ?

15 What are metalloids ?

16 Beryllium shows similar characteristics to Aluminum. Why ?

17 What is K electron capture ?

18 Electron affinities of Nitrogen and Phosphorous are very low. Why ?

19 Nuclear fission can result in explosion. How is it controlled in nuclear reactors ?

20 Water is a liquid while H_2S is a gas at normal temperature. Give reason.

21 Nano materials are good catalysts in comparison to their ordinary counter parts. Why ?

(9 x 1 = 9 weightage)

III. Answer any *five* questions. Each question has a weightage of 2. Answers may be in a paragraph.

22 Why is it important to revise the scientific theories ?

23 The cation radii are less than covalent radii. Why ? Discuss the periodicity of these properties.

24 Briefly explain how CH dating is used for the determination of age of fossils.

25 Why neutrons are better particles for artificial transmutation than a-particles ?

26 Briefly discuss thermoplastics and thermosetting plastics.

27 Discuss the Pauling scale of electronegativity.

28 Explain the characteristic properties of metals.

(5 x 2 = 10 weightage)

IV. Answer any *two* questions. Each question carries a weightage of 4.

29 Discuss the importance of chemistry as an interdisciplinary subject connecting physics, biology and other branches of science.

30 Briefly discuss the chemistry of nuclear power generators.

31 (a) How will you explain the emission of a, 1i, y rays during nuclear disintegration process ?

(b) A radioactive element decays at such a rate that after 68 minutes only ¼ of the original amount remains. Calculate the disintegration constant and half-life period.

(2 x 4 = 8 weightage)