

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, JANUARY 2012

(CCSS)

Chemistry (Core)

CH 1B 01—FOUNDATIONS IN CHEMISTRY

Time : Three Hours

Maximum : 30 Weightage

Section A

Answer all questions.

Each question has a weightage $\frac{1}{4}$.

Fill in the blanks :

1. A well tested scientific hypothesis is called _____.
2. The functional group present in carboxylic acid is _____.
3. Transition metals are _____ Block elements.
4. 1 a.m.u. is equivalent to _____ MeV.

Classify the following as True or False :

5. Lotus is more beautiful than rose is a scientific statement.
6. The method of deduction follows the order theory _____ data collection _____ analysis.
7. The radius of Cl⁻ ion is smaller than that of the Cl atom.
8. Isotones contain the same number of neutrons.

Choose the correct answer :

9. Which among the following does not belong to the category of science :—
 - (a) Astronomy.
 - (b) Astrology.
 - (c) Geology.
 - (d) Chemistry.
10. _____ is commonly used as an antipyretic.
 - (a) Tetracycline.
 - (b) Salicylic acid.
 - (c) Luminal.
 - (d) Paracetamol.
11. The most electronegative element is :
 - (a) Oxygen.
 - (b) Nitrogen.
 - (c) Fluorine.
 - (d) Boron.

Turn over

12. The radiant energy of sun is due to :

- (a) Disintegration. (b) Combustion.
(c) Nuclear fission. (d) Nuclear fusion.

(12 × ¼ = 3 weightage)

Section B

Answer all questions.

Each question has a weightage 1.

13. A good scientist is discovery prone. Do you agree with this. Why?
14. What is the difference between law and hypothesis?
15. What are nanomaterials? Give example.
16. Explain chain isomerism with an example.
17. What are condensation polymers?
18. Explain the term mass defect.
19. Distinguish between isotopes and isobars.
20. What is meant by scientific temper?
21. Define Bronsted acid and Bronsted base.

(9 × 1 = 9 weightage)

Section C

Answer any five questions.

Each question has a weightage 2.

22. Discuss the various aspects of scientific revolution.
23. State and explain modern periodic law.
24. Explain about any four branches of chemistry.
25. Write a short note on food additives.
26. Give the Slater's rule for calculating screening constant. How is effective nuclear charge related to screening constant?
27. Calculate the number of alpha and beta particles emitted during the disintegration of ${}_{92}\text{U}^{238}$ to ${}_{82}\text{Pb}^{206}$.
28. What is packing fraction? Discuss its variation with mass number.

(5 × 2 = 10 weightage)

Section D

*Answer any two questions.
Each question has a weightage 4.*

29. Discuss the importance of chemistry in service of man taking at least four different fields.
30. Define electron affinity. Explain the factors that influence electron affinity of an element. Discuss the variation of electron affinity along a period and down a group.
31. How are the ages of carbonaceous material and fossils determined.

(2 × 4 = 8 weightage)