M.Sc. 1st Semester Examination, 2023

CHEMISTRY

(*Food and Computer Basics*)

PAPER—CEM-104

Full Marks : 50

Time : 2 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

GROUP – A

Answer any **four** questions : 2×4

1. How excess glucose is stored in the body ? Write its chemical structure.

2. Define Canning.

3. How can one classify food based upon its perishability ? Give examples.

4. What is nutrition ? Name the six basic nutients.

5. How much energy is produced from 1 g each of carbohydrate, fat and proteins ?

6. What is water activity (a_w) ?

GROUP – B

Answer any **four** questions : 4×4

7. (*a*) What are essential and non-essential amino acids ?

   (*b*) Define complete and incomplete proteins.

   (*c*) How vegetarians can have complete proteins ?

8. (*a*) What is a spray dryer ?

   (*b*) Show the schematic diagram of a spray dryer.

   (*c*) What are the steps involved in a spray dryer ?

9. (*a*) What are the methods of food preservation ?

   (*b*) What is blanching ?

10. Define Perishable and Non-perishable food with suitable examples.

11. Define Food Spoilage. Explain different causes of Food Spoilage.

12. Write the role of two chemical preservatives KMS and Sodium benzoate.

GROUP – C

Answer any **two** questions : 8×2

13. Answer the following questions (any *four*) : 2×4

(*a*) What are the characteristics of a computer ?

(*b*) What are peripheral devices ? Give some examples.

(*c*) Distinguish between primary and secondary memory.

(*d*) Why do we need to learn programming language ?

(*e*) What are the roles of an operating system ?

(*f*) Define EX-NOR gate.

14. Answer the following questions (any *two*) : 4×2

(*a*) What are the applications of a computer ?

(*b*) State the characteristics of a fourth -generation computer.

(*c*) Explain different types of RAM & ROM.

(*d*) Define the software. List and explain the types of software. Give two examples of each category.

15. Answer the following questions (any *one*) : 8×1

(*a*) Draw a block diagram of the basic components of a computer system. Explain each component in detail.

(*b*) Convert the following numbers to desired number systems : 2×4

(*i*) $(2085)_8 = (?)_2$

(*ii*) $(11111111)_2 = (?)_8$

(*iii*) $(2AF)_{16} = (?)_{10}$

(*iv*) $(567)_8 = (?)_{16}$

16. Answer the following questions (any *one*) : 8×1

(*a*) Describe the advantages of different types of computers.

(*b*) Represent the following expressions by suitable logic gates

(*i*) $AB + BC + AC$

(*ii*) $(A + B + C)(A^c + B^c + C^c)(A+B+C^c)$

[Internal Assessment — 10 Marks]