2016

M.Sc. 1st Semester Examination

CHEMISTRY

PAPER—CEM-104

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

(*Food Processing and Computer Basics*)

Answer any *five* questions
taking *two* questions from each group.

Group—A

1. (a) What is food ?

(b) What do we need to preserve food ?

(c) What are the causes for food spoilage ? 2+3+3

2. (a) What are the principles of food preservation ?

(b) What are the methods of food preservation ? 3+5

3. (a) What do you understand by the term "CANNING" ?

   (b) Enlist & explain different processing steps involved in canning of fruits & vegetables. 2+6

4. (a) What is blanching ?

   (b) What are the advantages of blanching of fruits and vegetables ?

   (c) Classify the food on the basis of their pH value ? 2+3+3

5. Write short notes on any four of the following :

   (a) Hot Packing ;

   (b) Asepsis ;

   (c) Cholesterol ;

   (d) Diabetes ;

   (e) Aseptic canning ;

   (f) Flash-18 process. 2×4

6. (a) What is hurdle technology ?

   (b) In what way it preserves food materials ? Give some examples.

   (c) What are the advantages of freeze drying over thermal drying ? 1+4+3

Group—B

7. Convert the following number as specified below : 2×4

(i) $(245.22)_{10}$ to Binary Number up to three decimal points.

(ii) $(73.12)_8$ to Decimal Number.

(iii) $(32C.1B)_{16}$ to Binary Number.

(iv) $(223.12)_8$ to Hexa-decimal Number.

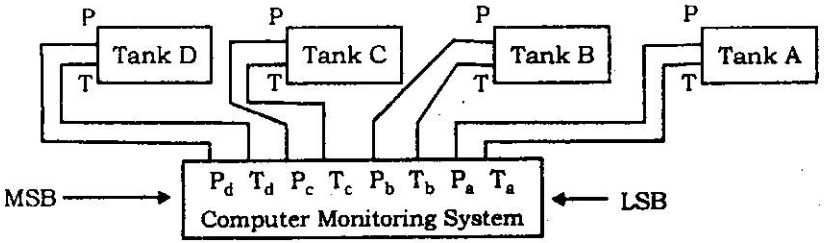
8. A Chemical processing plant uses a computer to monitor the temperature and pressure of four chemical tanks as shown in Fig–1. Whenever a temperature or a pressure exceeds the danger limit, an internal tank sensor applied a "1" to its corresponding output to the computer. If all conditions are OK, then all output is zero.

(i) If the computer reads the binary string 10101010, what problems exist ?

(ii) What problems exist if the computer is reading C2 H ?

(iii) What Hexadecimal number is read by the computer if the temperature and Pressure in both the tank A and D are high ?

(iv) Suppose Tank A and Tank D are old and are not used permanently and always fix with the "1". Then what will be the value of computer reading when no problem exist.



P = Pressure sensor,

T = Temperature Sensor.

Fig–1 2×4

9. Write short notes on any *four* of the following :

(i) 100110 – 100001 using 1's complement.

(ii) 101110 – 100100 using 2's complement.

(iii) 101011 + 111000 using simple addition.

(iv) 1100001 – 101010 using simple subtraction method. 2×4

10. (a) Draw the Block Diagram of Computer and Explain the Major Component of it.

(b) What is universal gate ? Explain with example.

(c) Write Demogran's Theory used for simplification of digital algebra. 4+3+1

———