Code No. 14506/CBCS

FACULTY OF ENGINEERING

B.E. I-Semester (CBCS) (Backlog) Examination, March/April 2021

Subject : Engineering Chemistry - I

Time: 2 hours **Max. Marks: 70**

PART – A

Note: Missing Data, if any, may be suitably be assumed.

Answer any five questions. **(5x2 = 10 Marks)**

1 Why the change in entropy is a system is not always a suitable criterion for spontaneous change?
2 Differentiate adiabatic and isothermal processes.
3 Define 'number of components'. Calculate the number of components if the degrees of freedom is zero and no. of phases is three.
4 What is Pattison's desilverisation of Lead?
5 What are various units of hardness of water?
6 Write the chemical reactions involved in sterilization by chlorination?
7 How would you prepare Butyl rubber? Give chemical reaction.
8 Write any three applications of conducting polymers.
9 What is Refractoriness? Give its significance.
10 What is glazing? Why this is performed?

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11 (a) Derive an expression for Gibb's-Helmholtz equation.
(b) Calculate the change in free energy at 25°C for the reaction

$$CO(g) + \frac{1}{2} O_2(g) \rightarrow CO_2(g) \quad \Delta H = -67.37 \text{ Kcal.}$$

and the change in entropy accompanying the process is -20.7 cal. $Deg^{-1}.mol^{-1}$.

12 (a) Define the term 'Degrees of freedom' and explain with suitable examples. Discuss the application of phase rule to Cu-Ni system.
(b) Explain the application of phase rule to water system with suitable phase diagram.

13 (a) What is alkalinity of water? How it can be determined?
(b) 100 ml of a water sample on titration with 0.02 N HCl requires 8 ml of the acid to phenolphthalein end point and 9 ml of acid to methyl orange end point. Calculate the type and extent of alkalinity present in the water sample.

14 (a) Differentiate between:
(i) Addition and condensation polymers
(ii) Thermoplastic and thermosetting polymers
(b) Write the preparation, properties and uses of BUNA-S and Kevlar.

15 (a) How would you classify lubricants? Explain the properties viscosity, viscosity index and saponification number.
(b) What are white wares? Write a note on manufacturing of white wares.

16 (a) Discuss the Ion-exchange method for the softening of water.
(b) Explain WHO and BIS guidelines for potable water.

17 (a) Explain the determination of porosity and thermal spalling. Give their significance.
(b) Discuss the criteria in terms of free energy for spontaneity and reversibility of a process with significance.

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Code No. 14005

FACULTY OF ENGINEERING

B.E. I Year (CSE) (Backlog) Examination, March / April 2021

Subject : Programming in C & C++

Time: 2 hours **Max. Marks: 75**

Note: Missing Data, if any, may be suitably be assumed.

PART – A

Answer any seven questions. **(7x3 = 21 Marks)**

1 Define Operating System and list the functions of OS.
2 Define Precedence and Associativity of operators in 'C'.
3 Differentiate local and global variables.
4 Write a function in 'C' to swap two numbers' without using third variable.
5 Differentiate between Union and Structures in 'C'.
6 What are different File opening modes in 'C'. Give the syntax of fopen () function.
7 Define Constructor. What are different types of Constructors.
8 What are Inline functions. Give an example.
9 Define an Abstract class. Give an example of Abstract class.
10 How static members of a class can be initialized and accessed? Give example.

PART – B

Answer any three questions. **(3x18 = 54 Marks)**

11 a) Explain Basic components of a computer system with a block diagram.
b) List out the iterative statements in 'C' along with their Syntax.

12 a) Write a program in 'C' to sort the elements of an array using bubble sort.
b) What are storage classes in C. Give example for each.

13 a) Write a program in 'C' to create a File.
b) Write a program to read 'n' employee information and display. The employee structure should contain-Empid, Emprame, Salary, Date of Joining.

14 a) What is overloading in C++.
b) Write a program for overloading ++ operator in C++.

15 a) What is Inheritance in C++.
b) Explain different types of Inheritance with examples.

16 a) What is Exception.
b) How Exceptions are handled in C++. Give an example.

17 Write short notes on:
a) Recursion
b) Virtual functions
c) Friend function

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