QUESTION PAPER CODE- 52017

University Institute of Engineering & Technology

(Recognised Under Section 2(f) and 12B of UGC)

Kurukshetra University, Kurukshetra

Roll No. -

THEORY EXAMINATION – May - 2019		TIME – 3 H
B.TECH -	SEMESTER - II	M.M. - 75

PAPER -AS- 103 | **SUBJECT - Applied Chemistry (Re-appear)**

Note: All questions in Part-A and Part-B are compulsory. Attempt any four questions from Part-C selecting at least one from each unit.

PART-A (15 Marks)

Q. No. – 1 Answer the following questions. 15x1=15

(i)	Name the four phases in which Sulphur can exist.
(ii)	State the Third law of themodynamics.
(iii)	Define eutectic point in a phase diagram. Also give an example.
(iv)	Define extensive properties of a system.
(v)	Give the relationship between different units of hardness.
(vi)	Who is considered as father of Green Chemistry?
(vii)	Define the term coagulation. Also give example of some coagulants.
(viii)	Name the metal whose oxide is volatile in nature.
(ix)	Define Iodine number with reference to lubricants.
(x)	A good lubricant should have low or high viscosity index?
(xi)	List the necessary conditions for electrochemical corrosion.
(xii)	Write the structure of EDTA.
(xiii)	One nanometer =----------meters
(xiv)	Give an example of any material having two dimensions in nanoscale.
(xv)	Define Flash point of a lubricant.

PART-B (20 Marks)

	UNIT-I	
2	**a)** State the First law of the thermodynamics. Also write its mathematical expression. **b)** Calculate the entropy change when two moles of an ideal gas are allowed to expand isothermally from a volume of 1 litre to 10 litre.	2+3
3	Define scale and sludge. What are their disadvantages. Name the methods that can be used For prevention of scale and sludge	5
4	a) Describe the extreme pressure lubrication. b) What are additives? Give some examples.	3+2
5	Write a note on nanocomposites.	5

PART-C (40 Marks)

	UNIT-I	
6	a) Derive integrated form of Clausius-Clapeyron equation. Also give its application. b) Define chemical potential. Calculate its variation w.r.t. temperature and pressure.	6+4
7	a) Define the terms with suitable examples- Congruent melting point, Component, Phase with reference to phase diagram. b) Draw and explain the phase diagram of Sulphur system.	3+7
8	a) Give the IUPAC definition of Green Chemistry. Explain various principles of Green Chemistry. b) What are ionic liquids? Give examples of anions and cations used in ionic liquids.	8+2
9	a) Define alkalinity of a water sample. Determine the type and amount of alkalinity of a water sample if its 100ml requires 4ml of N/50 sulphuric acid solution for neutralization up to Phenolphthalein end point and another 16ml of same acid is required for further titration to methyl orange end point. b) Explain the ion- exchange method used for removal of hardness of water.	5+5
10	Explain the following properties of lubricants- 1) Saponification number (II) Consistancy (III) Cloud point and pour point	4+4 +2
11	a) Explain the different methods used for prevention of corrosion. b) What is differential aeration corrosion? Describe the stress corrosion.	5+5
12	What are cementing materials? Describe the composition, properties and manufacturing process of Portland cement.	10
13	Write a note on following- carbon nanotubes, fullerene and dendrimers.	3+ 4+3