NBM-003-10120012 Seat No. _____

First Year B. Sc. (Sem. II) (CBCS) Examination

March / April - 2017

BS-IC-201 - Industrial Chemistry

Faculty Code : 003
Subject Code : 10120012

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Question paper carries total 5 questions.
(2) All the questions are compulsory and carry l4 marks each.
(3) Draw labeled diagram wherever necessary.
(4) Assume suitable data.

1 (a) Answer the following questions : **4**

(1) Keyboard is _____ device in computer.

(2) Windows XP is operating system for computer. Is this statement true or false?

(3) Define: Calorific value.

(4) Boiler is also known as _____

(b) Answer in brief : (any one out of **two**) **2**

(1) Enlist output devices of computer.

(2) Explain Clerk's method for water softening in brief.

(c) Answer in detail : (any one out of two) **3**

(1) Draw diagram of computer system with input and output devices, describe it in brief.

(2) Draw only diagram of Ion exchange resin method for water softening.

(d) Write a note on : (any one out of two) **5**

(1) Explain any five applications of computer with description of each.

(2) Explain Vertical tubular boiler with diagram.

2 (a) Answer the following questions : **4**

(1) Enlist types of adsorption.

(2) _____ is range of HLB Value.

(3) _____ is catalyst for manufacturing NH_3 by Haber process.

(4) _____ is biological catalyst.

(b) Answer in brief : (any one out of **two**) **2**

(1) Explain autocatalysis in detail.

(2) Define :

(a) Sineresis

(b) Adsorption.

(c) Answer in detail : (any one out of two) **3**

(1) Explain factors affecting adsorption.

(2) Explain electrophoresis in detail.

(d) Write a note on : (any one out of two) **5**

(1) Derive Freundlich adsorption isotherm.

(2) Explain Breding's arc method for preparation of colloidal solution.

3 (a) Answer the following questions : **4**

(1) Define : Selectivity in brief.

(2) What is energy?

(3) Define : Stoichiometry coefficient.

(4) What is heat capacity?

(b) Answer in brief : (any one out of two) **2**

(1) State the law of conservation of energy.

(2) Discuss limiting reactant in brief.

(c) Answer in detail : (any one out of two) **3**

(1) Explain Hess's law of constant heat summation.

(2) Discuss standard heat of reaction from heat of combustion.

(d) Write a note on : (any one out of two) **5**

(1) The feed containing 60 mole% A, 30 mole % B and 10 mole % inert enters a reactors. The product stream leaving the reactor is found to contain 2 mole% A. Reaction taking place is $2A + B \rightarrow C$ Find the percentage of original A getting converted to C.

(2) Write detailed note on various forms of energy.

4 (a) Answer the following questions : **4**

(1) Define: Solid cake and filtrate.

(2) _____ cooling result into formation of large number of nuclei, which result in large number of small crystals.

(3) If humidity of gas is less, then _____ the rate of drying.

(4) Nutrex filter suitable for sticky materials. True/False

(b) Answer in brief : (any one out of two) **2**

(1) Enlist characteristics of filter media.

(2) Write merits and demerits of Oslo crystallizer.

(c) Answer in detail : (any one out of two) **3**

(1) Discuss Bag filter in detail.

(2) Explain Disc bowl in detail.

(d) Write a note on : (any one out of two) **5**

(1) Explain Swenson-Walker crystallizer in detail.

(2) Discuss Drum dryer in detail.

5 (a) Answer the following questions : **4**

(1) Define : Cavitations

(2) NRV stands for_____

(3) Define: Tube pitch

(4) What is importance of baffle in mixing?

(b) Answer in brief : (any one out of two) **2**

(1) Differentiate between Reciprocating and Centrifugal compressor.

(2) Explain turbine type impeller in brief.

(c) Answer in detail : (any one out of two) **3**

(1) Explain Double pipe heat exchanger in detail.

(2) Discuss positive-displacement compressor in detail.

(d) Write a note on : (any one out of two) **5**

(1) Explain Jet ejectors in detail.

(2) Discuss tumbling mixers in detail.