MBI-0031011012 Seat No. _____

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

November / December – 2016

BS - IC - 101 : Industrial Chemistry

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

INSTRUCTIONS:

1) Question paper carries total 5 questions
2) All the questions are compulsory & carry 14 marks each.
3) Draw labeled diagram wherever necessary.
4) Assume suitable data.

QUESTION 1

1 A: Answer the following questions. **04-Marks**

1. _____ has given organic origin theory of petroleum.
2. A natural gas containing mainly methane but not higher hydrocarbon is called _____.
3. Magnetic ores can be concentrated by _____ process.
4. Give any four examples of oxide ores.

1B: Answer in brief. (Any one out of two) **02-Marks**

1. Write domestic and industrial uses of natural gas
2. Define: a) Metallurgy, b) Ore.

1 C: Answer in detail. (Any one out of two) **03-Marks**

1. Explain Girbotol process for removal of H_2S form petroleum products.
2. Give only flow diagram of process for extraction of metal from ore.

1 D: Write a note on. (Any one out of two) **05-Marks**

1. Explain Dubb's process for liquid phase thermal cracking with detailed diagram.
2. Explain froth flotation process with diagram.

QUESTION 2

2 A: Answer the following questions. **04-Marks**

1. Enlist types of coal.
2. Analysis of nitrogen content in a coal sample is part of _____ analysis.
3. CH_3OH is blended with ethanol to make it _____.
4. Which acids are used for nitration of cellulose?

2 B: Answer in brief. (Any one out of two) **02-Marks**

1. Define: a) British thermal unit, b) Calorific value
2. Enlist any six types of starch.

2 C: Answer in detail. (Any one out of two) **03-Marks**

1. Explain proximate analysis of coal.
2. What is artificial silk? Explain its preparation.

2 D: Write a note on. (Any one out of two) **05-Marks**

1. Explain carbonization of coal by beehive oven process with diagram.
2. Explain manufacturing of paper in detail.

QUESTION 3

3 A: Answer the following questions. **04-Marks**

1. Define Normality.
2. What is Mole % ?
3. Differentiate between evaporation and dryer.
4. Short tube evaporator is suitable for high viscous liquid. True/False

3 B: Answer in brief. (Any one out of two) **02-Marks**

1. Enlist fundamental quantities.
2. Enlist the merits and demerits of forced circulating evaporator.

3 C: Answer in detail. (Any one out of two) **03-Marks**

1. Explain Weight fraction.
2. Draw only diagram for film type evaporator.

3 D: Write a note on. (Any one out of two) **05-Marks**

1. Write a note on derived quantities.
2. Explain multiple effect evaporators in detail.

QUESTION 4

4 A: Answer the following questions. **04-Marks**

1. What is blending?
2. Define Filtration.
3. During over all material balance of drying, Wet solid is converted in to_____
4. State the law of conservation of Mass.

4 B: Answer in brief. (Any one out of two) **02-Marks**

1. Draw only block diagram of distillation for material balance.
2. Explain solid-solid and liquid-liquid extraction.

4 C: Answer in detail. (Any one out of two) **03-Marks**

1. Draw only block diagram of drying for material balance.
2. It is desired to make up 1000 kg of a solution containing 35% by weight of a substance 'A'. Two solutions are available, one containing 10 weight% 'A' and other containing 50 weight% 'A'. How many Kgs of each solution will be required?

4 D: Write a note on. (Any one out of two) **05-Marks**

1. Write down outline procedures used for doing material balance.
2. Centrifuge is fed with a slurry containing 25% solids by weight and wet solids obtained after filtration are analyzed to contain 8% moisture by weight and filtration is found to contain 200 ppm solids. If centrifuge machine produces 100 kg per desired wet product and quantity of slurry to be handled is 5000 kg per batch calculate
   i) The time required for filtration and slurry
   ii) Loss of solids in filtration per batch

QUESTION 5

5 A: Answer the following questions. **04-Marks**

1. The ratio of partial pressure to mole fraction is known as _____.
2. In regular packing, cost of installation is _____.
3. The solubility of solute gas in a solvent should be _____ so less amount of solvent required.
4. Absorption of NH_3 from NH_3-air mixture in water is an example of _____.

5 B: Answer in brief. (Any one out of two) **02-Marks**

1. What is minimum and maximum boiling azeotrope?
2. Enlist various packing material used in gas absorption.

5 C: Answer in detail. (Any one out of two) **03-Marks**

1. Explain valve tray in brief.
2. Which factors are affecting to selection of solvent in extraction?

5 D: Write a note on. (Any one out of two) **05-Marks**

1. Explain mixer settler cascades in detail.
2. Derive rayleigh equation for simple distillation.