MBI-003-001109 Seat No. _____

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

November / December – 2016

IC.P - 101 : Industrial Chemistry

Faculty Code : 001

Subject Code : 001109

Time : $2\frac{1}{2}$ Hours] [Total Marks : **20+50=70**

INSTRUCTIONS:

1) All the questions are compulsory
2) Figures to the right indicate maximum marks.
3) Draw labeled diagram wherever necessary.
4) Assume suitable data.
5) Question-1 carries 20 marks
6) Question-2 & 3 carry 25 marks each.

Question 1: Answer the following questions. **20-Marks**

1. Content of carbon in petroleum ranges from _____ to _____ %
2. _____ has given organic origin of petroleum.
3. _____ oil is asphalt based petroleum.
4. _____ is secondary fuel derived from coal.
5. Moisture content in peat is _____ than moisture content in anthracite.
6. Mixture of _____ & _____ is called nitrating mixture.
7. Proof value is related with concentration of _____ in given sample.
8. Define: Distillation
9. The cost of valve tray is only about _____ higher than sieve tray.
10. Liquid hold up is considerably _____ in packed tower than plate tower.
11. What is relative volatility?
12. Define: Evaporation
13. If selectivity equal to one, then separation by extraction is possible. is it true?
14. In comparison to distillation and extraction, extraction is _____ expensive than distillation.
15. Fuel is_____substance.
16. Define Calorific value.
17. Which of the fuel burns with clinker formation?
18. Which of the fuel requires large storage tank?
19. Combustion is_____ process.
20. Unit operation means only_____ changes are taken place.

Question 2(a): Answer any Three **06-Marks**

1) Write in brief: Origin of petroleum.
2) Write composition of natural gas.
3) Give comparison between absorption and distillation.
4) Explain sieve tray in brief.
5) Enlist fundamental quantities.
6) Define Mole % with example.

Question 2(b): Answer any Three **09-Marks**

1) Explain use of bubble cap in fractional distillation column with diagram.
2) Draw diagram of froth flotation with brief description.
3) Explain steam distillation in brief.
4) Enlist characteristics of ideal packing.
5) Define: a) Kg atom b) Gram mole c) Volume %
6) Explain material balance of Absorption with block diagram.

Question 2(c): Answer any Two **10-Marks**

1) Describe Dubb's process for liquid phase thermal cracking with diagram.
2) Describe fluidized bed catalytic cracking with diagram.
3) Derive Rayleigh equation for simple distillation.
4) Explain rotating disc contactor for gas absorption.
5) Explain comparison among solid, liquid and gaseous fuel.

Question 3(a): Answer any Three **06-Marks**

1) What is BTU? Where it is used?
2) Enlist types of starch.
3) Enlist merits and demerits of wiped film evaporation.
4) Draw only diagram for spray column for extraction.
5) Draw only block diagram of material balance over distillation.
6) Define: a) Normality b) Molality

Question 3(b): Answer any Three **09-Marks**

1) Write synthesis of artificial silk.
2) Give a detailed note on magnetic separation process for concentration of magnetic ores.
3) Explain climbing film evaporator in brief.
4) Discuss selection of solvent for extraction.
5) Discuss Weight fraction with example.
6) Write disadvantages of Solid fuel.

Question 3(c): Answer any Two **10-Marks**

1) What is carbonization of coal? Describe it with vertical retort apparatus.
2) Describe process for manufacturing of paper in detail.
3) Explain forced circulating evaporator in detail.
4) Discuss Mixer-settler cascades in detail.
5) 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