**PBQ-003-001109** Seat No. _____

## B. Sc. (Sem. I) (CBCS) Examination

November / December - 2018

## IC.P - 101 : Industrial Chemistry

**Faculty Code : 003**

**Subject Code : 001109**

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

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

1     Answer the following questions.                           **20**
  (1) Equilibrium distillation is also known as _____.
  (2) Azeotrope is _____ boiling mixture.
  (3) The volatility of solvent in absorption should be _____.
  (4) Rasching ring is an example of packing materials. True/False ?
  (5) Viscous and salty liquid can be used in _____ evaporator.
  (6) Extraction is more expensive than distillation. True/False ?
  (7) Density difference of solvent must be _____ for easy separation during extraction.
  (8) Fuel is _____ substance.
  (9) Write input side of filtration operation during doing material balance.
  (10) Which fuel can be transported through pipelines ?

(11) Give MKS unit of volumetric flow rate.

(12) Enlist fundamental quantities.

(13) Force per unit area is known as _____.

(14) "Isomerization takes place in reforming process." Is this statement true or false ?

(15) Girbotol's process is used for removal of _____ from natural gas.

(16) _____ is ore for aluminium extraction process.

(17) _____ is noble metal.

(18) Vertical gas retorts can be used for _____ process of coal.

(19) Paper is manufactured by _____ and _____ process.

(20) Write uses of alcohol.


2  (a)  Answer any three :                                                6
   (1)  Elaborate the word "Distillation' with example.
   (2)  Give any two characteristics of ideal packing.
   (3)  Draw only block diagram of evaporation for material balance calculation.
   (4)  Give disadvantages of solid fuel.
   (5)  Draw diagram of bubble cap used in fractional distillation column, give its uses.
   (6)  What are raw materials required for extraction of Al, Pb, Fe, Zn and Ca ?


   (b)  Answer any three :                                                9
   (1)  Draw only diagram of sieve and valve trays.
   (2)  Derive Rayleigh equation used for simple distillation.
   (3)  Discuss weight fraction in detail.
   (4)  Define : (a) Molality  (b) Gram mole
   (5)  Explain fluidized bed catalytic reactor in detail.
   (6)  Explain magnetic separation process in detail with diagram.


   (c)  Answer any two :                                                  10
   (1)  Discuss continuous distillation with rectification.
   (2)  Explain rotating disk contractor with neat diagram.
   (3)  Discuss classification of fuel in detail.

(4) Explain separation of components form crude oil with diagram.

(5) Explain extraction of iron in detail.

3 (a) Answer any three : **6**
(1) Draw only diagram of forced circulating evaporator.
(2) Enlist various factors affecting selection of solvent for extraction.
(3) Define : (a) Normality   (b) Kg atom
(4) Define : (a) Volume %   (b) Mole %
(5) Define : BTU and CHU.
(6) Enlist types of starch.

(b) Answer any three : **9**
(1) Give any three merits of film type evaporator.
(2) Write a note on packed tower.
(3) Explain material balance of filtration operation with rectangular block diagram.
(4) Give disadvantages of liquid fuel.
(5) Explain proximate analysis of coal in detail.
(6) Write short note on ethyl alcohol.

(c) Answer any two : **10**
(1) Give an account of multiple effect evaporators with schematic diagram.
(2) Explain derived quantities in detail.
(3) Write outlines procedure for material balance calculation.
(4) Explain vertical gas retort for carbonization of coal.
(5) Explain manufacturing of paper in detail.

———————