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(31) **SARDAR PATEL UNIVERSITY**

M.Sc. (Polymer Science & Technology) Semester-I Examination-2015

Tuesday, 21st April, 2015
10.30 a.m. to 1.30 p.m.

PS01EPST03: Industrial Chemistry – I

Total Marks: 70

Note: (1) Attempt all questions.
(2) Figures to the right indicate full marks.

Q.1 Write appropriate choice for the following. **(8)**

(1) Selectivity of solvent used in liquid extraction should be
(a) 1 (b) <1 (c) >1 (d) 0

(2) The driving force in any mass transfer operation is
(a) Concentration gradient (b) A ternary gradient (c) Valocity gradient (d) Momentum gradient

(3) Ponchon-Savarit method analyzes distillation based on
(a)Enthalpy balance (b) Mareial balance (c) Both enthalpy and material balance (d) None of these

(4) Milk is dried usually in a _____ drier.
(a)Freeze (b) Spray (c) Tray (d) Rotary

(5) For flow of fluid through circular cross section, the kinetic energy correction factor for laminar flow is
(a) 1 (b) 2 (c) 3 (d) 4

(6) For changing direction of pipeline, _____ is used.
(a) coupling (b) plug (c) elbow (d) valve

(7) _____ is a Newtonian fluid
(a) blood (b) tooth paste (c) water (d) starch solution

(8) The value of NPSH should be
(a) less than 1 (b) more than 1 (c) equal to 1 (d) None of these

Q.2 Attempt any **seven** of the following **(14)**

(1) Define – extract, raffinate, tie line, and plait point.

(2) Define weeping in distillation column.

(3) Enlist some industrial applications of fluidization.

(4) Why down comers and weirs provided in a plate column.

(5) Distinguish between pressure filter and vacuum filters.

(6) Define: (a) dew point & bubble point (b) absolute humidity & relative humidity

(7) Enlist the requirements for a good filter medium.

(8) Define Reynolds number.

(9) Define HTU & HETP

Q.3 (a) With the help of suitable examples, distinguish between azeotropic and extractive distillation. (6)

(b) Enlist the steps involved in calculation of theoretical stages in cross current & counter current extraction. (6)

OR

(b) Discuss the importance of L/G ratio in gas absorption. (6)

Q.4 (a) Explain drying. Draw and explain rate of drying curve for batch drier. (6)

(b) Differentiate between cross circulation and through circulation drying & What are the variables affecting rate of drying in a cross circulation drier. (6)

OR

(b) Write note on following. (6)

1. Rotary drier
2. Tray drier

Q.5 (a) Compare reciprocating pump with centrifugal pump. (6)

(b) Answer the following. (6)

1. Modified Bernoullis equation for pump.
2. Priming.

OR

(b) A centrifugal pump delivers 3 m/sec. of water to a height of 20 m. through a pipe 100 m. long & 0.12 m diameter, if density is 1000 kg/m^3 and viscosity is 0.001 kg/m.sec. Calculate the power required to drive the pump. (6)

Q.6 (a) Explain fluidization & its mechanism. (6)

(b) Write a note on Net Positive Suction Head. (6)

OR

(b) With the help of neat figure, explain following (6)

A) working of rotameter

B) working of venturimeter

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