

SEAT No. \_\_\_\_\_

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**SARDAR PATEL UNIVERSITY**

M.Sc. (Polymer Science Technology) Semester- II Examination-2018

Thursday, 19<sup>th</sup> April-2018

10:00 A.M. to 1:00 P.M.

**PS02EPST21: INDUSTRIAL CHEMISTRY - II**

Total Marks: 70

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

**Q. 1** Answer the following multiple choice questions. **(08)**

- (1) For changing the pipeline diameter \_\_\_\_\_ is used.  
(i) reducer (ii) elbow (iii) tee (iv) None of this
- (2) In gas absorption, mass transfer takes place from \_\_\_\_\_.  
(i) liquid phase to gas phase (iii) gas phase to liquid phase (ii) gas phase to gas phase (iv) none of above
- (3) The vibrations can be produced either mechanically or electrically with frequency of \_\_\_\_\_ even more per minute.  
(i) 1800 to 3600 (ii) 1600 to 3200 (iii) 3200 to 1500 (iv) 3200 to 4600
- (4) The filters which operate with high pressures are called \_\_\_\_\_.  
(i) Pressure Filters (ii) Rotary Drum Filter (iii) Filter Medium (iv) None of this
- (5) The height of the vessel ranges from \_\_\_\_\_ times the diameter.  
(i) 2 to 3 (ii) 3.5 to 4.5 (iii) 1.5 to 2 (iv) 2.5 to 5.5
- (6) Orifice meter is \_\_\_\_\_.  
(i) Variable Head meter (ii) Variable Temperature meter (iii) Variable Area meter (iv) None of this
- (7) The jaws crusher open and close \_\_\_\_\_ times per minute.  
(i) 200 to 220 (ii) 200 to 300 (iii) 250 to 400 (iv) 400 to 800
- (8) Rate of heat transfer per unit area is called \_\_\_\_\_.  
(i) heat flux (iii) latent heat (ii) sensible heat (iv) heat transfer co-efficient

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

- (1) Discuss the criteria for selecting solvent in gas absorption
- (2) Explain electrostatic separator.
- (3) Define tube pitch and tube clearance
- (4) Compare distillation and absorption.
- (5) Different between jaw crusher and gyratory crusher.

- (6) Explain mixing of liquid with liquid.
- (7) With the help of a neat figure, explain the working of a pitot tube.
- (8) Explain magnetic drum separator.
- (9) What are filter aids? Why are they used?

- Q. 3** (a) Explain pipe, tubing and fittings. (06)
- (b) With the help of a neat figure, explain the working of vibrating screens. (06)

**OR**

- (b) Describe on trommels. (06)
- Q. 4** (a) Differentiate between constant pressure & constant rate filtration. Why is the combination Of constant pressure & constant rate filtration preferred? (06)
- (b) Answer the following. (06)
1. What is the importance of minimum L/V ratio in absorption?
  2. Enlist the desirable characteristics of good tower packings.

**OR**

- (b) Answer the following. (06)
1. Distinguish between pressure filters and vacuum filters.
  2. Enlist the requirements for a good filter medium.
- Q. 5** (a) With the help of a neat figure, explain the working of shell & tube heat exchanger. (06)
- (b) Answer the following. (06)
1. Discuss prandtl's boundary layer concept.
  2. With the help of neat figure, explain the working of rotameter.

**OR**

- (b) Calculate the surface required for HE which has to cool 55,000 kg/hr. of alcohol from 66 to 40°C using 40,000 kg/hr of water entering at 5°C. The thermal conductivity of wall is 4.10. The overall heat transfer coefficient outer tube are is 2084KJ/m<sup>2</sup>k. The specific heat of alcohol is 3.76 KJ/Kg k and of water is 4.18 KJ/Kg k and do calculation for single counter flow and parallel flow. (06)
- Q. 6** (a) Explain smooth-roll crusher. (06)
- (b) With the help of a neat figure, Principle and Construction of ball mill. (06)

**OR**

- (b) Write a note on Banbury mixture. (06)

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