

SEAT No. _____

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SARDAR PATEL UNIVERSITY

EXTERNAL EXAMINATION

B.SC. INDUSTRIAL CHEMISTRY (5TH SEMESTER)

US05CICH24: Fluid Mechanics and Mechanical Operations

Tuesday, 29th December, 2020

Time: 2:00 pm to 4:00 pm

Total Marks: 70

Notes: Figures to the right indicate full marks.

Q.1 Answer the following Multiple-Choice Questions. (All are compulsory) (10)

- 1) The branch of engineering science which deals with the behavior of gaseous fluids at rest is called _____.
a) Aerostatic b) hydrodynamic c) aerodynamic d) none
- 2) The branch of engineering science which deals with the behavior of liquid in motion is called _____.
a) Aerodynamic b) aerostatic c) Hydrodynamics d) None of these
- 3) The fluid which follows Newton's law of viscosity is called
a) Newtonian Fluids b) Static fluid c) Non-newtonian fluid d) Dynamic fluid.
- 4) Grinders employ _____.
a) Impact b) Attrition c) Both a& b d) None of these
- 5) Ultrafine grinders operate by _____.
a) Attrition b) Impact c) Impact & Attrition d) None of these
- 6) A cutting action takes place in knife cutters, dicers and _____.
a) Gizzlers b) Idlers c) Slitters d) None of these
- 7) In rotary drum filter operated with vacuum _____ take place.
a) Filtration b) Washing c) Partial drying d) All of these
- 8) In early stage of filtration the rate of filtration is _____.
a) High b) Low c) Medium d) Constant
- 9) Helical screw agitator is used for
a) Low viscous paste b) Semi-viscous paste
c) None d) High viscous paste
- 10) Which type of agitator is most suitable for handling fibrous and dense slurries?
a) Cone type b) Paddle type c) Impeller type d) Turbine type

Q.2 Are the following statements true or false? (All are compulsory) (08)

1. Reducer is used as a fitting for joining of the two pipes.
2. For branching of the pipe line Tees and cross used as a fittings.
3. Attrition means rubbing the particles.
4. In the Dodge crusher movable jaw is pivoted as at the top.
5. Filter medium should not be resistance to mechanical wear.
6. Diatomaceous earth is the example of filter aid.
7. Effectiveness of mixing in kneaders depends on the blade design.
8. Propellers are rotates at 300 - 350 rpm.

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(P.T.O.)

Q. 3 Answer the following short questions (Attempt any 10 out of 12)

(20)

1. What is fluid mechanics?
2. Write briefly about inclined manometer.
3. Define the term Hydrodynamics and Aerodynamics.
4. Write the classifications of size reduction equipment's and screening devices.
5. State kick's law.
6. Distinguish between blake jaw crusher and dodge jaw crusher.
7. Why the filter aids are used in filtration?
8. Write desired properties of filter media.
9. Enlist the different name of industrial filter.
10. Explain the function of idlers and tripper with belt conveyer.
11. Enlist application of apron conveyer.
12. What are paddle impellers?

Q.4 Answer the following Long questions (Attempt any 04 out of 08)

(32)

1. Write the classification of fluid based on viscosity. Discuss types of different fluid in detail.
2. Write a detail note on U-tube Manometer.
3. Discuss and derive an equation for speed of ball mill.
4. Write difference between crushing and grinding.
5. What is filtration? Explain different factors affecting rate of filtration. Discuss various factors considered for selection of a filter medium.
6. Discuss the following in detail.
 - a. Rotary filter
 - b. Plate filter
7. Write a detail note on Belt conveyer.
8. Explain swirling and vortex. Discuss the methods used to prevent swirling and vortex.

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