

SEAT No. _____

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[97]

SARDAR PATEL UNIVERSITY
B.Sc. Industrial Chemistry
(Semester – V) EXAMINATION
Course No. : US05CICH05
(Mechanical Operations)

Date: 30/12/2020

Total Marks: 70

Time: 2.00 pm to 4.00 pm

[10]

Q.1 Answer the given multiple choice questions.

1. Leaf filter is a type of
a) Clarifying filter
b) Cake filter
c) Both (a) and (b)
d) None of these
2. Filters that are used to remove very small amount of solids to produce sparkling clear liquid are referred to as
a) Cake Filters
b) Clarifying Filter
c) Both (a) and (b)
d) None of these.
3. The unit of specific cake resistance is
a) m/Kg
b) mass /Kg
c) Kg/m
d) None of these
4. Sodium ethyl xanthate is a
a) Promoter
b) Collector
c) Frothing agents
d) Surfactant
5. In a cyclone separator separation is done using
a) Centrifugal force
b) Inertia force
c) Gravitational force
d) Viscous force
6. Paddle impeller consists of _____ blades
a) One
b) Two
c) Three
d) More than four.
7. Dry powdery solid materials are transported by a
a) belt conveyor
b) screw conveyor
c) bucket conveyor
d) None of these
8. Apron conveyors are used for
a) Heavy loads and short runs
b) Small loads and long runs
c) Heavy loads and long runs
d) None of these
9. The crusher in which movable jaw is pivoted at the bottom is
a) Blake Jaw Crusher
b) Dodge Jaw Crusher
c) Roll Crusher
d) None of these
10. Size reduction mechanism used in Roll Crusher is
a) Attrition
b) Cutting
c) Compression
d) Impact

Q.2 True or False

[4]

1. The filter medium used for acidic slurry is Nylon cloth.
2. The material which is repelled by a magnetic field is diamagnetic.
3. For transporting pasty materials Screw Conveyor is used.
4. "The work required for reduction of particle size is directly proportional to the new surface created" is Rittinger's law.

[1]

[P.T.O.]

Q.2 Fill in the blanks. [4]

1. A granular material used to increase the porosity of the filter cake is _____
2. If the fall of particle through stationary fluid is impeded by the other particles, the process is called _____
3. For the transportation of ultrafine particle, the equipment used is _____
4. If the material is passed only once through the machine and no attempt is made to return the oversize material for reground , the process is known as _____

Q.3 Short Answer Questions(Attempt any ten) [20]

1. Write the difference between cake filter and clarifying filter.
2. Write classification of filters.
3. Discuss constant rate filtration and constant pressure filtration.
4. What is sedimentation?
5. Explain the function of promoters, collectors, modifiers and frothing agent.
6. List any two functions of thickeners.
7. Write the objectives of mixing operation.
8. Explain working of propeller impeller.
9. List different parts of Apron Conveyor.
10. Write classification of size reduction equipments.
11. State Rittinger's law and Kick's law
12. What is the difference between Ball mill and Tube mill.

Q.4. Long Answer Questions (Attempt any Four) [32]

1. Discuss about Rotary Filter. Also list its advantages and disadvantages.
2. Write about Plate and Frame filter press.
3. Discuss about Hydraulic Jig.
4. Write about Cyclone Separator.
5. With the help of diagram explain working of Belt conveyor.
6. Write a note on: Equipments used for mixing solid with solid.
7. Write the difference between Crushing and Grinding.
8. Derive an equation for critical speed of ball mill.

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[2]