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Seat No : _____

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SARDAR PATEL UNIVERSITY
T.Y.B.Sc. Industrial Chemistry
(Semester – 5th) EXAMINATION
20th November 2019
Course No. : US05CICH05
(Mechanical Operations)

Total Marks: 70

Time: 10.00am to 1.00pm

Q.1 Answer the given multiple choice questions. [10]

1. Filters that are used to remove very small amount of solids to produce sparkling clear liquid are referred to as cake filters.
a) Cake Filters
b) Clarifying Filter
c) Both (a) and (b)
d) None of these.
2. Rotary drum filter is a type of
a) Clarifying filter
b) Cake filter
c) Both (a) and (b)
d) None of these
3. The separation of solids from suspension in liquid by gravity settling is called
a) Filtration
b) Mixing
c) Sedimentation
d) Evaporation
4. Sodium Ethyl Xanthate is a
a) Promoter
b) Collector
c) Frothing agents
d) Surfactant
5. The material which is when placed in a magnetic field is repelled is called
a) Diamagnetic
b) Paramagnetic
c) Ortho magnetic
d) None of these
6. Highly viscous liquids and pastes are agitated by
a) Propellers
b) Turbine agitators
c) Multiple blade paddles
d) None of these
7. A deep apron conveyor is known as
a) Belt conveyor
b) Bucket conveyor
c) Screw conveyor
d) None of these
8. Dry powdery solid materials are transported by a
a) Belt conveyor
b) Bucket conveyor
c) Screw conveyor
d) None of these
9. The minimum speed at which centrifuging occurs is called the
a) Critical speed
b) High speed
c) Low speed
d) None of these
10. In ball mill the forces act are
a) Gravitational force
b) Centrifugal force
c) Both a) and b)
d) None of these

Q.2 Attempt any ten.

[20]

- i. What is filter aid? Explain its use in filtration.
- ii. Explain constant rate filtration and constant pressure filtration.
- iii. List essential components of a centrifuge machine.
- iv. Explain Hindered Settling and Terminal Settling Velocity.
- v. Discuss role of coagulants in sedimentation.
- vi. Write components of Pneumatic Conveyor.
- vii. List different purpose of mixing.
- viii. Discuss homogeneous and heterogeneous mixing.

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- ix. List and explain different types of impellers.
- x. Write the classification of size reduction equipments.
- xi. State Rittinger's and Kick's law.
- xii. Write any two differences between crushing and grinding.

Q.3 Write notes on : i) Filter medium and its characteristics [10]
 ii) Rotary filter

OR

Q.3 Write notes on : i) Suspended Batch Centrifuge [10]
 ii) Leaf Filter

Q.4a) Write a note on: Hydraulic jig [5]
b) Explain working of Double cone classifier. [5]

OR

Q.4a) Describe Magnetic Drum Separator. [5]
b) Explain working of Froth Floatation Cell [5]

Q.5a) Define: Swirling and Vortex. Also describe their preventive measures. [5]
b) Discuss Belt conveyer. [5]

OR

Q.5a) Write a note on: i) Equipments used for mixing viscous masses. [10]

Q.6a) Derive an equation for critical speed of Ball mill. [5]
b) Write a note on: Industrial Screens. [5]

OR

Q.6a) Explain working of Jaw Crusher. [5]
b) Write the difference between open circuit and closed circuit grinding. [5]

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 (2)