

Roll No. _____

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SARDAR PATEL UNIVERSITY
EXTERNAL EXAMINATION
B.Sc. INDUSTRIAL CHEMISTRY (5th -SEMESTER)
US05CICH24: (Fluid Mechanics & Mechanical Operations)
Friday, 26th November, 2021

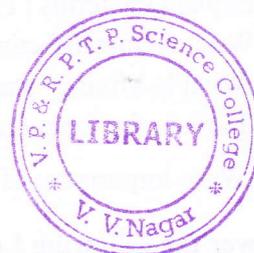
Time: 3:00 pm to 5:00 pm

Total Marks: 70

Note: Figures to the right indicate full marks.

Q.1 Answer the given multiple choice questions. (All are compulsory) [10]

1. Fluid which does not offer resistance to flow is known as _____.
(a) Dynamic fluid (b) Hydro dynamic
(c) Ideal fluid (d) Static fluid
2. A Simplex pump is the one having only _____ cylinder.
(a) One (b) Two (c) Three (d) Four
3. Fluids which resist a small stress indefinite but flow linearly under the action of large shear stress is known as _____.
(a) Laminar flow (b) Hydro dynamic
(c) Bingham Fluid (d) Static fluid
4. Size reduction machine commonly reduce the size by _____.
(a) Compression (b) Impact
(c) Attrition (d) All of these
5. Cutters are size reduction equipment which gives the particle size and shapes ranges _____.
(a) 2 -10mm length (b) 500 -1000mm length
(c) 50-10mm length (d) 100-1000mm length
6. Sodium Ethyl Xanthate is a _____.
(a) Promoter (b) collector
(c) Frothing agents (d) surfactant
7. Rotary drum filter is a type of _____.
(a) Cake filter (b) Clarifying filter
(c) Pressure filter (d) None of these
8. The settling rate of a particle depends upon its _____.
(a) Size (b) density (c) Concentration of solid (d) All of these
9. Propeller impeller consists of _____ blades.
(a) One (b) Two (c) Three (d) More than four
10. For mixing solids with solids _____ equipment is employed.
(a) Agitated tank (b) Tumbling mixer
(c) Kneader (d) Belt Conveyor



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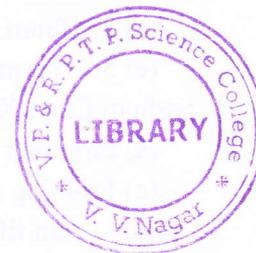
P.T.O.

Q.2 Are the following statements TRUE or FALSE? (All are compulsory) [08]

1. The pressure developed by the pump is proportional to the density of fluid in the impeller.-TRUE/FALSE?
2. A fluid which follows Newton's law of viscosity is called Newtonian fluids. -TRUE/FALSE?
3. Size reduction refers to an operation wherein particles of solids are cut into smaller Size. -TRUE/FALSE?
4. Rittinger's law is more accurate than Kick's law.- TRUE/FALSE?
5. A granular material used to increase the porosity of the filter cake is filter aid.- TRUE/FALSE?
6. The separation of solids from a suspension in a liquid by gravity settling is called Sedimentation.- TRUE/FALSE?
7. Baffled tank is used for prevent formation of swirling and vortex formation. - TRUE/FALSE?
8. Pneumatic conveyer is employed for transportation of lumps and coarse solids.- TRUE/FALSE?

Q.3 Answer the following short questions (Attempt any 10 out of 12) [20]

1. Define : (a) Compressible fluid (b) Incompressible fluid
2. Write a difference between pipes and tubes.
3. Give various classification of pump.
4. Give a difference between open circuit grinding and closed circuit grinding.
5. Write classification of size reduction equipment and screening devices.
6. State Rittinger's law.
7. Give a difference between sedimentation and filtration.
8. Explain the terms : Free settling and Hindered settling.
9. Write factors affecting the rate of filtration.
10. What is Mixing? state various types of mixing operation.
11. Explain the function of idlers and tripper in belt conveyer.
12. Write importance of mixing and agitation.



Q.4 Answer the following Long questions (Attempt any 4 Out of 8) [32]

1. Explain construction and working of centrifugal pump with suitable diagram.
2. Derive an equation of Bernoulli's theorem and also write its limitations.
3. What is size reduction? Write necessity of size reduction & also write classification of crushers.
4. Write a note on Jaw crusher.
5. Write a note on: (a) Hydraulic jig (b) Cyclone separator
6. Explain construction and working of Plate and frame filter press with neat diagram.
7. Write a detail note on belt conveyer.
8. Discuss the following in details.
a. Double -arm kneader b. Tumbling mixer