

Roll No. & Sign:



A Charutar Vidya Mandal's Institution
V.P. & R.P.T.P. SCIENCE COLLEGE
(AUTONOMOUS) (Grant – in – Aid)
Affiliated to Sardar Patel University



Bachelor of Science (Semester – 5) Internal Theory Examination – 2025

US05MAICH02: Fluid Mechanics & Mechanical Operations

Date: 23rd September, 2025

Time: 10:45 AM to 12:15 PM

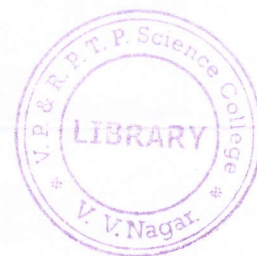
Day: Tuesday

Total Marks: 30 Marks

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

[06]

1. Viscosity is a measure of:
(A) Fluid Pressure (B) Fluid resistance to flow
(C) Fluid Temperature (D) Fluid Density
2. Reciprocating pumps belong to:
(A) Positive displacement pumps (B) Centrifugal Pumps
(C) Blowers (D) Compressors
3. Industrial screening is used for:
(A) Separating particles based on size (B) Changing chemical properties
(C) Compressing gases (D) Boiling Liquids
4. Filter aids are used to:
(A) Improve filtration rate and clarity (B) Increase particle size
(C) Measure pressure (D) Heat the liquid
5. Cyclones separate particles based on:
(A) Centrifugal force (B) Filtration
(C) Evaporation (D) Heat
6. Liquid-liquid mixing involves:
(A) Two immiscible or miscible liquids (B) Solid and liquid
(C) Two solids only (D) Gas and liquid only



Q – 2 Write an explanatory note on Newtonian and Non-Newtonian fluids.

[06]

OR

Q – 2 Derive the continuity equation and explain its importance in fluid flow.

[06]

Q – 3 Write short notes on the construction, working, and use of Gyratory Crusher

[06]

OR

Q – 3 Differentiate between Crushing and Grinding.

[06]

Q – 4 Explain the construction, working, and efficiency of Plate and Frame Filters with a labelled diagram.

[06]

OR

Q – 4 Define sedimentation. Explain Batch sedimentation test with a neat sketch.

[06]

Q – 5 Write a note on the types of equipment used for solid-solid mixing in industries.

[06]

OR

Q – 5 Define swirling and vortex formation in mixing. How can vortex formation be minimized?

[06]

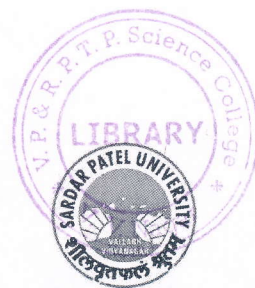
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QUIZ TEST

Supervisor Signature:



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Time: 10:45 AM to 12:15 PM

Obtain Marks:

Day: Tuesday

Total Marks: 15 Marks

Examiner Signature:

Note: The figure to the right indicates full marks of the questions.

Q-1 Fill in the blanks with the appropriate answer given in the bracket [8 Marks]

1. Water and air are examples of _____ fluids. (**Newtonian / non-Newtonian**)
2. A device used to measure fluid pressure using a column of liquid is called a _____. (**Manometer / Distillation**)
3. Primary crushers are used for _____ reduction of large rocks or ores. (**Coarse / Powder**)
4. Fine grinders are used to produce very _____ particles. (**Heavy / Small**)
5. Sand filters are commonly used for removing _____ particles from water. (**Suspended / Viscous**)
6. Thickeners are used in _____ sedimentation processes. (**Continuous / Batch Only**)
7. Mixing is the process of combining two or more materials to form a _____ mixture. (**Homogeneous / Viscous**)
8. Solid-solid mixing is commonly used in _____ blending. (**Powder / Gas**)

Q-2 State whether the following statement is true or false. [Write your answer in the box] [7 Marks]

1. The SI unit of dynamic viscosity is Pascal-second (Pa·s).
2. Static pressure is the pressure exerted by a fluid at rest.
3. Settling tanks can separate solids from fluids based on particle density and size.
4. Vibrating screens are used in industrial screening for size separation.
5. Sedimentation depends only on fluid colour.
6. Froth flotation is used to separate fine particles based on surface properties.
7. Mixing is done to produce a homogeneous mixture.