

- Q.30 Explain both friction loss from sudden enlargement and contraction with diagram.
- Q.31 Describe the construction and working principle of a inclined-tube manometer.
- Q.32 Differentiate between laminar and turbulent flow with diagram ?
- Q.33 Describe the working principle of a reciprocating pump , Include an explanation of the suction and discharge strokes, the role of valves, and how pressure is generated in reciprocating pump.
- Q.34 Describe about the Rotatameter.
- Q.35 Explain anyone type valve with diagram.

#### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain the operating principle of an orifice meter in fluid flow measurement. Discuss the equations and coefficients involved in calculating flow rate using an orifice plate.
- Q.37 Derive the Hagen poiseulli's equation .
- Q.38 Write short note on any of three :-
1. Properties of fluid
  2. Rayleigh's method
  3. Effect of roughness in pipes
  4. NPSH
  5. Colour coding of industrial piping

No. of Printed Pages : 4

180531/120531

Roll No. ....

/030531/116833

**3rd Sem / Chem, P&P, Chem Engg. ( Spl. Paint Tech.),  
Chem Engg. (Spl. Polymer Engg.)**

**Subject:- Fluid Flow**

Time : 3Hrs.

M.M. : 100

#### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 The Reynolds number is used to determine:
- a) Flow rate in a pipe
  - b) Fluid density
  - c) Whether flow is laminar or turbulent
  - d) Pressure drop in a pipeline
- Q.2 When the velocity of a fluid increases, what happens to its kinetic energy, according to Bernoulli's principle ?
- a) It decreases
  - b) It remains constant
  - c) It increases
  - d) It becomes zero
- Q.3 What type of valve is characterized by a circular disk that rotates to control the flow of fluid ?
- a) Globe valve
  - b) Gate valve
  - c) Butterfly valve
  - d) Ball valve
- Q.4 Which factor plays a significant role in determining the frictional losses in a pipe system?
- a) Pipe length
  - b) Pipe diameter
  - c) Pipe material
  - d) Pipe colour

- Q.5 In a venturi tube, as the cross-sectional area decreases, what happens to the fluid velocity and pressure, according to bernoulli's principle?
- Velocity increases, Pressure decreases
  - Velocity decreases , Pressure increases
  - Velocity and Pressure remain constant
  - Velocity and Pressure become zero
- Q.6 Which type of fluid machinery is primarily designed to increase the pressure of a fluid ?
- Turbine
  - Pump
  - Compressor
  - Heat exchanger
- Q.7 What is the primary parameter used to characterize laminar flow in a pipe ?
- Reynolds number
  - Mach number
  - Froude number
  - Weber number
- Q.8 What is the typical unit of measurement for flow rate in the international system of units ( SI) ?
- Cubic feet per second ( cfs )
  - Gallons per minute (gpm)
  - Cubic meters per hour ( $m^3/h$ )
  - Liters per second (L/s)
- Q.9 The parts of the venturi meters are
- Convergent section
  - Divergent section
  - Throat
  - All of above
- Q.10 Which type of flow is characterized by a constant fluid density but varying velocity and pressure with time and position ?
- Incompressible flow
  - Steady flow
  - Compressible flow
  - Viscous flow

(2) 180531/120531  
/030531/116833

## SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Define the terms "Viscosity"
- Write formula of continuity equation?
- What distinguish a Newtonian fluid?
- Define pump head .
- What's the opposite of laminar flow?
- Name any one pump used in industry .
- What is the purpose of a check valve ?
- What is hydrostatic law
- Write one application of blower ?
- Write one use of fluid.

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Write down about pascal law
- Explain bernoulli's theorem with assumptions
- Write a note on flow nozzle and pitot tube .
- Draw and explain friction factor chart.
- What is meant by compressible flow , and when does it become significant ?
- Derive the equation for fanning friction faction equation ?
- Explain a comprehensive overview of centrifugal pumps, including its working principle .
- Difference between schedule number , ID and OD of pipe .
- Explain the working principles of U-tube and inclined -tube manometers with their applications.

(3) 180531/120531  
/030531/116833