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# SARDAR PATEL UNIVERSITY
## B.Sc. Industrial Chemistry
### (Semester – V) EXAMINATION

Date:31/12/ 2020        Course No. : US05CICH06

### (Fluid Mechanics and Heat Transfer)

**Total Marks: 70**                **Time: 2.00 pm to 4.00 pm**

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

1. What is the unit of kinematic viscosity in SI unit?
   a)$m^2/sec$                c)$N/m^2.sec$
   b)Kg.sec/m                  d) None of these.

2. A fluid is a substance which is_____
   a)Capable to flow              c) No definite shape
   b)Undergoes deformation       d)All of the above

3. The branch of science which studies the behavior of gaseous fluid in motion is
   a)Hydrostatic                 c) Hydrodynamics
   b)Aerostatic                  d)Aerodynamics

4. Pump converts the .................. energy supplied to it from some external source into pressure energy.
   a)Mechanical     b) Kinetic        c) Potential       d) Translational.

5. A Simplex pump is the one having only ....................... Cylinder.
   a)Four            b)Two          c)Three         d) One

6. For controlling the flow through pipe lines_____ is used.
   a)Elbow                   c)Reducer
   b) Cross                   d) Valve

7. Thermal conductivity depends upon
   a)Nature of the material       c)Both a) and b).
   b)Temperature of the material     d) None of these

8. The ratio of the useful hydraulic work performed to the actual work input is known as
   a) Capacity      b) NPSH    c) Overall Efficiency     d) None of these

9. Extended surface heat exchangers are well suited for handling ------------fluids
   a) Viscous                 c) Denser
   b) Volatile                d) corrosive

10. Widely used heat exchanger in paraffin wax plant is
    a)Graphite                 c)Finned Tube
    b)Scrapped Surface         d)All of these

**Q.2**    **True or False**                                      **[4]**

1. The fluid density of which changes with change in temperature and pressure is known as incompressible fluid.
2. Mono pump is an example of Rotary pump.
3. Heat transfer in fluids takes place by convection mechanism.
4. The shortest distance between two tubes is known as pitch

**Q.2 Fill in the blanks.** [4]

1. Tooth paste is a _____ type of fluid.
2. For changing the diameter of pipe _____ is used.
3. Finned tube heat exchanger is also known as _____
4. Driving force for heat flow is _____ difference.

**Q.3 Short Answer Questions (Attempt any 10 out 0f 12)** [20]

1. Discuss about Absolute viscosity and Kinematic viscosity.
2. What is Reynolds number? Explain Laminar flow and Turbulent flow
3. Define: Ideal Flow and Real Flow.
4. List different type of impellers used in centrifugal pump.
5. What is Priming and why it is done?.
6. Define: Capacity and Overall efficiency.
7. What is thermal conductivity? Write its SI unit.
8. Write the equation for heat flow through cylinder.
9. Explain Natural convection and Forced Convection.
10. What is fouling factor?
11. Write classification of Shell and Tube Heat Exchanger.
12. Explain Baffles and Clearance.

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

1. Write classification of fluid based on viscosity.
2. Derive Bernoulli's equation. Also write its limitations.
3. With the help of diagram explain working of Reciprocating Pump.
4. Write a note on: Gear Pump.
5. Write Fourier's Law Also derive an equation for heat flow through resistance in series.
6. Derive an equation for individual and overall heat transfer coefficient.
7. Write a note on: Plate Type Heat Exchanger.
8. Discuss Graphite heat exchanger.

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