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SEAT No. _____

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SARDAR PATEL UNIVERSITY

B.Sc. INDUSTRIAL CHEMISTRY (VOC.)
SEMESTER – III EXAMINATION -2018
FLUID MECHANICS AND HEAT TRANSFER
SUB CODE: US03CICV02

DATE: 24TH NOV. 2018
DAY: SATURDAY

TIME: 02:00 PM TO 5:00 PM
TOTAL MARKS: 70

Q.1 Choose the correct answer.

[10]

- (1) Fluid which does not offer resistance to flow is known as _____.
(A) Dynamic fluid. (C) Static fluid
(B) Hydro dynamic. (D) Ideal fluid.
- (2) Fluids which resist a small stress indefinite but flow linearly under the action of large shear stress is known as _____.
(A) In-Compressible fluid. (C) Bingham Fluid.
(B) Hydro dynamic. (D) Laminar flow
- (3) A fluid which follows newton's law of viscosity is called as _____.
(A) Bingham. (C) Real fluid.
(B) Newtonian fluids. (D) Non-newtonian fluids.
- (4) A Simplex pump is the one having _____ cylinder.
(A) One (C) Three
(B) Two (D) Four
- (5) Volute converts the _____ energy of the liquid imparted by the impeller to pressure energy.
(A) Mechanical (C) Potential
(B) kinetic (D) Transforming
- (6) Which of the following has highest thermal conductivity?
(A) Copper (C) Aluminum
(B) Silver (D) Iron
- (7) Rate of transfer process is _____.
(A) Resistance/Driving Force (C) Resistance/Conductance
(B) Conductance/ Driving Force (D) Driving force/Resistance
- (8) Which of the following is the equation of Fouriers law of heat conduction?
(A) $Q = -kA [dT/dn]$ (C) $Q = -kV [dT/dx]$
(B) $Q = -kA [dn/dT]$ (D) $Q = -kg [dn/dT]$
- (9) Equipment which employs refrigerant such as ammonia it is called as _____.
(A) Chiller (C) Boiler
(B) Cooler (D) Heater.
- (10) Heat exchanger equipment employed to meet latent heat requirement at the bottom of a distillation column is known as _____.
(A) Chiller (C) Reboiler
(B) Cooler (D) Heater

Q.2 Answer the following(Any ten)

[20]

- (1) Give the classification of fluid.
- (2) Discuss Bingham fluids with examples.
- (3) Define vapor pressure & surface tension.
- (4) Define the term: suction head, delivery head
- (5) What is priming of a centrifugal pump?
- (6) Explain clearly why priming is essential before starting a centrifugal pump?
- (7) What do you mean by thermal conductivity?

①

- (8) Write a note on optimum thickness of insulation.
- (9) Enlist the various characteristics of a thermal insulator.
- (10) Where scrapped surface heat exchangers are useful?
- (11) What is tube pitch? List types of it.
- (12) Write the uses of baffles.

Q.3 (A) Write explanatory note on U-tube manometer. [05]
(B) Write a note on inclined manometer. [05]

OR

Q.3 (A) Derive an equation of continuity. [05]
(B) Discuss in detail about differential monometer. [05]

Q.4 Write a note in centrifugal pump. [10]

OR

Q.4 Discuss in detail about reciprocating pump. [10]

Q.5 (A) Explain in detail about Fourier's law of heat conduction. [05]
(B) What do you mean by thermal insulation? Write its importance and characteristics of an ideal insulator with examples. [05]

OR

Q.5 (A) Write a note on thermal conductivity and derive its unit. [05]
(B) Derive the equation of heat flow through a cylinder. [05]

Q.6 (A) Differentiate between single pass and multi pass shell. [05]
(B) Write note on double pipe heat exchanger [05]

OR

Q.6 (A) Write a note on shell & tube type heat exchanger. [05]
(B) Write a note on extended surface heat exchanger. [05]

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(2)