P P SAVANI UNIVERSITY

Third Semester of Diploma Examination

November 2022

IDCH2010 Fluid Flow Operation

19.11.2022, Saturday **Time: 10:00 a.m. To 12:30 p.m.** **Maximum Marks: 60**

Instructions:

1. Make suitable assumptions and draw neat figures wherever required.
2. Use of scientific calculator is allowed.

Q - 1	Answer all MCQ. Choose ONE option only.	**[05]**	**CO**	**BTL**
(i)	Which of the following pumps is used for boiler feed water applications? (a) gear pump (b) plunger pump (c) metering pump			**1**
(ii)	The conversion of kinetic energy into pressure energy is more efficient with ..... (a) volute type casing (b) diffuser type casing.			**1**
(iii)	The need to priming is eliminated by providing – (a)negative suction head. (b)positive suction head. (c)positive discharge head.			**1**
(iv)	Which of the following pumps may be used for feeding reactants, catalysts, inhibitors to reactors at controlled rates? (a) plunger pump (b) metering pump (c) centrifugal pump			**1**
(v)	Name the pump which is commonly used for corrosive liquids, toxic liquids or those containing suspensions of abrasive solids or those containing suspensionsof abrasive solids. (a) plunger pump (b) diaphragm pump (c) centrifugal pump			**1**
Q - 2 (a)	Explain in detail the definition of fluid.	**[05]**		**1**
Q - 2 (b)	Explain U-tube and inclined tube type manometers with figure.	**[05]**		**6**
	OR			
Q - 2 (a)	Give names of different types of fluids with examples.	**[05]**		**1**
Q - 2 (b)	Differentiate between Compressible and Incompressible Fluid.	**[05]**		**4**
Q - 3 (a)	Derive the Continuity equation.	**[05]**		**3**
Q - 3 (b)	Give the difference between Pipe and Tube.	**[05]**		**4**
	OR			
Q - 3 (a)	Give the names of pipe fittings and with its function.	**[05]**		**1**
Q - 3 (b)	Define Impeller and it's different types.	**[05]**		
Q - 4	Attempt any **ONE**.	**[05]**		
(i)	Discuss the construction and working principal of Rotameter in detail.			**6**
(ii)	Write down difference between Centrifugal and Reciprocating pump.			**4**
Q - 5	Answer all MCQ. Choose ONE option only.	**[05]**		
(i)	The conversion of kinetic energy into pressure energy is more efficient with			**1**

(a) volute type casing
(b) diffuser type casing

(ii)	What phenomenon occurs when the pressure in the suction line of a centrifugalpump is less than the vapour pressure of the liquid ? (a) Cavitation (b) NPSH		1
(iii)	The net positive suction head (NPSH) of a centrifugal pump is defined as the sum of the velocity head and the pressure head at the (a) discharge. (b) suction. (c) suction minus vapor pressure of the liquid at suction temperature. (d) discharge minus vapor pressure of the liquid at the discharge temperature.		1
(iv)	The simple pitot tube measures the _____ pressure.. (a) static (b) dynamic (c) total (d) none of these		1
(v)	Molten soap mass is transported by a _____ pump. (a) diaphragm (b) reciprocating (c) gear (d) centrifugal		1
Q - 2 (a)	Draw neat sketch of gate valve and explain.	[05]	6
Q - 2 (b)	Differentiate between Compressor, Fan and Blower.	[05]	4
	OR		
Q - 2 (a)	Explain concept of Manometers and state different types of manometers.	[05]	1
Q - 2 (b)	State different types of fluid and explain all of them in detail.	[05]	1
Q - 3 (a)	State five different fluid properties and explain all of them in detail.	[05]	1
Q - 3 (b)	Derive Bernoulli's equation.	[05]	4
	OR		
Q - 3 (a)	Name any three types of fittings with their application.	[05]	1
Q - 3 (b)	Explain construction and working of reciprocating pump with neat sketch.	[05]	6
Q - 4	Attempt any **ONE**.	[05]	
(i)	Describe construction and working of centrifugal pump with neat figure.		6
(ii)	Define Laminar flow, Transition flow and Turbulent flow.		1

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create