Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BPHARM – SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 210004 **Date: 09-01-2013**

Subject Name: Pharmaceutical Engineering

Time: 02:30 pm – 05:30 pm **Total Marks: 80**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	Define & Explain:- Stoichiometry, Material Balance, Energy Balance	**06**
	(b)	What is the scope of Pharmaceutical Engineering?	**05**
	(c)	How is fuel value determined?	**05**
Q.2	(a)	Discuss factors affecting selection of plant construction.	**06**
	(b)	Discuss principle, construction and working of Screw conveyer.	**05**
	(c)	Write a note on lift pump.	**05**
Q.3	(a)	Differentiate between: (i) Orifice and Venturimeter (ii) Stream line and Turbulent flow (iii) Filtration and clarification	**06**
	(b)	Explain: (i) Reynolds Number (ii) Fluid Head	**05**
	(c)	Hundred pounds of wet air containing 0.1 lb of water vapor per pound of dry air is mixed with 50 pounds of another wet air containing 0.02 lb of water vapor per pound of dry air. Calculate pounds of water vapor per pound of dry air in the final mixture.	**05**
Q.4	(a)	Describe Fourier's law. Explain with diagram resistance in series and parallel.	**06**
	(b)	Describe the role of stainless steel in pharmaceutical industry.	**05**
	(c)	Write a note on pumps used for sterile filling.	**05**
Q.5	(a)	What is tie substance? Write a note on material balance involving tie substance taking concentration of salt solution.	**06**
	(b)	Explain overall heat transfer co-efficient. Derive the equation to find out 'U' taking simple condenser as example.	**05**
	(c)	What is 'Black Body'? Write a note on Stefan- Boltzman law.	**05**
Q. 6	(a)	Classify boilers. Enumerate boiler accessories.	**06**
	(b)	Copper rod which is 3 ft. long and 2" in diameter with k=220. Rod is insulated (heat loss is to be neglected). If one end has temp 70F and other end has 220F. Calculate rate of heat flow along the rod in Btu/hr.	**05**
	(c)	Discuss types of pressure in fluid flows.	**05**
Q.7	(a)	Classify Intraplant conveyors. Discuss belt conveyor.	**06**
	(b)	Give mechanism, working and application of any type of heat exchanger.	**05**
	(c)	Write a note on orifice meter.	**05**

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