Seat No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY DIPLOMA ENGINEERING – SEMESTER –VI • EXAMINATION – WINTER 2015

Subject Code: 3360502			Date: 21/12/2015			
Subj	ect Na	ame: Chemical Engineering Plant Economics				
Time	e: 02:3	30 PM TO 05:00 PM	Total Marks: 70			
Instru	ictions:					
1.	Atter	npt all questions.				
2.	Make	Make Suitable assumptions wherever necessary.				
3. Figures to the right indicate full marks.						
4.	Use o	f programmable & Communication aids are strictly prohib	ited.			
5.	Use 0 Engli	a only simple calculator is permitted in Mathematics.				
0.	Engn	si version is authentic.				
Q.1		Answer any seven out of ten.		14		
	1.	State the objectives of plant project.				
	2.	List types of flow diagrams.				
	3.	Name any four sources of information for plant project.				
	4.	What is zone selection?				
	5.	Discuss: Percent return on investment.				
	6.	Explain "Six-tenth factor rule."				
	7.	Define cost index.				
	8.	Discuss: Payout time period.				
	9.	Give mathematical equation to determine asset value us method.	ing declining balance			
	10.	Give mathematical equation to determine annual deprec fund method.	iation using sinking			
Q.2	(a)	Write a short note on process design.		03		
		OR				
	(a)	Write a short note on Need for plant design.		03		
	(b)	Write a short note on selection of process.		03		
		OR				
	(b)	Write a short note on The Role of chemical Engineer.		03		
	(c)	Write a short note on Pilot plant.		04		
		OR				
	(c)	Discuss economic factors to be considered in plant design.		04		
	(d)	Explain various types of qualitative flow diagrams.		04		
		OR				
	(d)	Discuss batch processing Vs continuous processing.		04		
Q.3	(a)	Write a short note on specification sheets.		03		
	(4)	OR		~~		
	(a)	Write a short note on pipe strength and wall thickness.		03		
	(b)	Discuss Factors governing selection of insulation.		03		

		OR	
	(b)	Write a short note on piping design problems.	03
	(c)	Discuss standard equipments vs. special equipments.	04
		OR	
	(c)	Write a short note on selection of material handling equipments.	04
	(d)	Explain methods of plant layout.	04
		OR	
	(d)	State principles of plant layout and discuss storage layout in detail.	04
Q.4	(a)	Define: (i) Service life (ii) Salvage value (iii) Asset value	03
		OR	
	(a)	Discuss about causes of depreciation.	03
	(b)	Write a short note on Fixed capital investment.	04
		OR	
	(b)	State types of cost indexes. Explain any one in detail.	04
	(c)	Write a short note on Break-even chart.	07
Q.5	(a)	Write a short note on optimum economic design.	04
	(b)	Describe analytical procedure for determining optimum condition with two	
	(c)	variables. The fixed cost of insulation for a steam pipe per meter of pipe is Rs. $(20X+30)$ per year and the cost of heat loss from the pipe per meter of pipe is Rs. $100/X$ per year, where X is the thickness of insulation in cm. Find the optimum thickness of insulation.	
	(d)	A property has an initial value of Rs. 200000, service life of 20 years and final salvage value of Rs. 40000. Determine the asset value of the property at the end of 10 years using straight-line method	03
