

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018

**Subject Code:2160507**

**Date:30/11/2018**

**Subject Name:Advance Separation Techniques**

**Time: 02:30 PM TO 05:00 PM**

**Total Marks: 70**

**Instructions:**

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

		MARKS
<b>Q.1</b>	(a) List commercial application of melt crystallization	<b>03</b>
	(b) List the advantages of membrane separation techniques.	<b>04</b>
	(c) Explain in detail concept and working of short path distillation unit process.	<b>07</b>
<b>Q.2</b>	(a) List all applications of membrane distillation process.	<b>03</b>
	(b) Explain four step of pressure swing adsorption with an example.	<b>04</b>
	(c) Explain the principal of supercritical extraction using ROSE process.	<b>07</b>
	<b>OR</b>	
	(c) List out all commercial applications of supercritical extraction.	<b>07</b>
<b>Q.3</b>	(a) Define with an example a membrane separation technique.	<b>03</b>
	(b) Discuss the phase equilibrium diagram of melt crystallization.	<b>04</b>
	(c) Explain the various aspect of reactive and catalytic distillation over the conventional distillation	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) List commercial application of pressure swing adsorption.	<b>03</b>
	(b) Explain BALE packing and KATMAX packing.	<b>04</b>
	(c) Explain in detail the different method of melt crystallization.	<b>07</b>
<b>Q.4</b>	(a) Give the disadvantages of supercritical extraction over liquid-liquid extraction.	<b>03</b>
	(b) List out all commercial applications of reverse osmosis.	<b>04</b>
	(c) Clarify the advantages & disadvantages of pressure swing distillation over azeotropic and extractive distillation.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain the reverse osmosis process.	<b>03</b>
	(b) Discuss in detail the de-caffination process.	<b>04</b>
	(c) Explain working of pressure swing distillation and list its applications.	<b>07</b>
<b>Q.5</b>	(a) Explain concept and working of nanofiltration.	<b>03</b>
	(b) Explain membranes modules used in membrane reactor.	<b>04</b>
	(c) List all commercial application of pervaporation and ultra filtration.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain concept and working of ultrafiltration.	<b>03</b>
	(b) Discuss with an example the working principal of osmotic distillation.	<b>04</b>
	(c) Explain the pervaporization method for the production of absolute alcohol.	<b>07</b>