GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2018

Subject Code:2153905   **Date:04/12/2018**

Subject Name: Nanotechnology and Environment

Time: 10:30 AM TO 01:00 PM   **Total Marks: 70**

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

			MARKS
Q.1	**(a)**	Define Risk and categorize it.	**03**
	(b)	Differentiate between direct risk and indirect risk.	**04**
	(c)	Justify the following statement	**07**
		(1) Nanotechnology could make battery recycling more effective	
		(2) Nanomaterials can be used as treatment of waste cleanup in water.	
		(3) Nanotechnology based solutions for oil spills.	
Q.2	**(a)**	Define ultra-filtrations and explain how it is different from normal filtration.	**03**
	(b)	Explain the working of Reverse Osmosis	**04**
	(c)	Write a note on nanostructured ceramic membrane for waste water treatment.	**07**
		OR	
	(c)	What is Human Health Hazards? And what are its preventive measures?	**07**
Q.3	**(a)**	Justify how pH governs the photo catalytic effect.	**03**
	(b)	Explain the working mechanism of reactive catalytic ceramic membrane.	**04**
	(c)	What is pulmonary system and what is the effect of CNT on it.	**07**
		OR	
Q.3	**(a)**	What effect will be seen when insoluble solids are inhaled by human body?	**03**
	(b)	Explain the practical example of photo catalytic mechanism.	**04**
	(c)	Write a note on how TiO_2 Nanoparticles help to works for water purification process.	**07**
Q.4	**(a)**	Explain the damage done by arsenic impurity observed in water.	**03**
	(b)	Explain the chemistry how a catalyst is degraded.	**04**
	(c)	Write a note on factors which affect the photo catalytic process.	**07**
		OR	
Q.4	**(a)**	Explain the dose response evolution.	**03**
	(b)	What is aquaporin and explain its working mechanism.	**04**
	(c)	Give various applications of Inorganic and Organic membranes.	**07**
Q.5	**(a)**	Classify the membranes based on the size.	**03**
	(b)	Explain how Nano membranes help domestic water treatment.	**04**
	(c)	Define oxidative stress and how justify how it is related to the pulmonary inflammation?	**07**
		OR	
Q.5	**(a)**	Define Intrinsic and Extrinsic factors.	**03**
	(b)	Write a note on photo catalytic degradation of specific waterborne pollutants.	**04**
	(c)	Write a short on methods by which hazards can be predicted and its preventive measures.	**07**

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