Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2173905 Date: 03/12/2018

Subject Name: Electrical and Optical properties of Nanomaterials

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)**	What is the importance of electrical transport property in various sector?	**03**
	(b)	Illustrate the conduction in materials with reference to the AC	**04**
	(c)	Explain four probe and two probe method.	**07**
Q.2	**(a)**	Define why Nano thin film possess a variation in electrical transport property.	**03**
	(b)	Write a short note on DC conduction of materials.	**04**
	(c)	Write applications of Nano thin film with a properties of its thickness	**07**
		OR	
	(c)	Explain AC conductivity of nano materials.	**07**
Q.3	**(a)**	Opto-electric properties of thin film in industry, illustrate.	**03**
	(b)	Is sintered temperature affect the grain size?	**04**
	(c)	Explain what type of properties is changed before and after of the temperature apply.	**07**
		OR	
Q.3	**(a)**	Define Grain and grain boundary with reference of size reduction.	**03**
	(b)	Microstructure effect on thin film, explain it.	**04**
	(c)	Explain grain size effect on transport property nano materials.	**07**
Q.4	**(a)**	What exactly happed when light interact with materials.	**03**
	(b)	Explain roll of optical property of thin film in LED.	**04**
	(c)	Explain how optical and electrical property differentiate in nano material	**07**
		OR	
Q.4	**(a)**	Give photo catalytic effect definition with example.	**03**
	(b)	Explain difference between oxide materials and non-oxide material's Properties in term of photo-catalytic effect.	**04**
	(c)	Write short note on photo-catalytic property of nano materials.	**07**
Q.5	**(a)**	Give application of optical property of thin film in defense sector.	**03**
	(b)	Give the application of optical property of thin film in space technology.	**04**
	(c)	Find out what are the end points (limitation) of thick film.	**07**
		OR	
Q.5	**(a)**	Give 4 to 5 name of thin film synthesis technique.	**03**
	(b)	Explain particle size effect on optical property.	**04**
	(c)	Write a note on sensitivity of nano thin film.	**07**

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