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MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal 576104)

## V SEM B.Tech. (BME) DEGREE MAKE-UP EXAMINATIONS, DEC/JAN 2018-19

## SUBJECT: MATERIALS SCIENCE FOR BIOMEDICAL ENGINEERING (BME 4013) (RECISED CREDIT SYSTEM) Friday, 28<sup>th</sup> December 2018: 2 PM to 5 PM

TIME:	3 HOU	MAX. MARKS: 50						
Instructions to Candidates:								
1. Answer ALL questions.								
2. Draw	<i>iabeled</i>	I diagram wherever necessary						
1.	(a)	Explain the temperature dependence of career concentration in n type semiconductors.	7					
	(b)	Explain the temperature dependence of career concentration in n type semiconductors.	3					
2.	(a)	Explain in detail various possible band structure in solids at 0K.	5					
	(b)	Relate macroscopic property $\varepsilon_r$ and microscopic polarization phenomena namely, $\alpha_e$ of dielectric materials.	<sup>a</sup> , 5					
3.	(a)	Explain the working principle of power compensation (PC) type DSC.	5					
	(b)	Explain the working principle of Nd-YAG LASER.	5					
4.	(a)	Correlate between band gap and colour of a non-metallic material.	5					
	(b)	Explain Barden Cooper and Schrieffer (BCS) theory.	5					
5.	(a)	What is ferroelectricity? Explain in detail.	7					
	(b)	Explain isotopic effect in superconductivity.	3					