Reg. No.											

MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal 576104)

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

SUBJECT: TISSUE ENGINEERING (BME 4010)
(REVISED CREDIT SYSTEM)
Wednesday, 2nd January, 2019, 2 to 5 PM

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to Candidates:

1. Answer ALL questions.
2. Draw labeled diagram wherever necessary.

1A.	Explain the developmental map associated with the blood vessel development.	4
1B.	Analyze all the step associated with cell signaling and also highlight the specific role of each component.	6
2A.	Compare de-differentiation, re-differentiation and trans-differentiation.	3
2B.	Explain briefly, the role of various transcription factors pertaining to the LIF-STAT pathways.	4
2C.	How do G1 phase regulators influence adult stem cell differentiation? How would you assess the onset of differentiation of stem cells?	3
3A.	What is “porogen”? How does it help in making porous scaffold? Explain.	3
3B.	Critically analyze the criteria for scaffolds fabrication in tissue engineering.	4
3C.	What is porosity? How would you characterize porosity? Explain.	3
4A.	Explain the functions of “feeder cell” layer.	3
4B.	Explain antibody panning method of cell selection.	4

4C.	Compare selective adhesion and pre-plating methods of cell selection. Analyze the pros and cons of these methods.	4
5A.	Classify cryoprotectants. Explain the working of DMSO and PEG cryoprotectants.	
5B.	How do embryonic stem cells counter the limitation of “Hay Flick number”?	3
5C.	Explain autologous chondrocyte implantation method.	4