Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SIXTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER DEGREE EXAMINATIONS, JUNE - 2018

SUBJECT: ADVANCED SENSOR TECHNOLOGY [ICE 4009]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Use neat diagrams where ever needed.

1A.	Discuss the design and modeling issues in conventional sensing.	**4**
1B.	Highlight the changes to be incorporated in advanced sensing techniques as compared to basic block diagram of instrumentation system.	**4**
1C.	'A fragile sensor is most opted for optical based medical sensing'. Comment	**2**
2A.	Discuss how optical sensors can be used to measure lumped and distributed strain measurement of a bridge.	**4**
2B.	What is the principle of eddy current sensor? How eddy current sensor can be used to measure skin thickness?	**3**
2C.	Explain the process of temperature measurement using fluorescence.	**3**
3A.	List the techniques to improve sensitivity of LVDT	**3**
3B.	Describe the process of torque measurement using magnetostrictive sensors	**3**
3C.	Illustrate a technique for 'qualitative and quantitative analysis of train wheel and axle'	**4**
4A.	Explain the working of vibrating quartz accelerometer.	**3**
4B.	With the neat diagram, explain the working of diffusion controlled current limiting oxygen sensor?	**4**
4C.	Characterize the biosensing technique based on the response	**3**
5A.	List the different types of potentiometric sensors. Differentiate between catalytic and ISFET sensors	**4**
5B.	Explain the influence of advanced sensing in agriculture / farm automation	**6**