BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS:	**MTECH/PRE-PHD**	**SEMESTER : I/NA**
BRANCH:	**ECE**	**SESSION : MO/18**

SUBJECT: EC540 ADVANCED SENSING TECHNIQUES

TIME:	**3 HRS.**	**FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Write down the characteristics of Smart Sensor. Compare between conventional pressure sensor and smart pressure sensor.	[5]
Q.1(b)	Draw the block diagram of monolithic sensor interface design. Explain the individual block.	[5]
Q.2(a)	Explain the operation of Ion-selective membrane electrode. Calculate the entire cell potential.	[5]
Q.2(b)	Compare between standard hydrogen electrode and saturated calomel electrode.	[5]
Q.3(a)	Compare between surface micromachining and bulk micromachining.	[5]
Q.3(b)	Draw the schematic diagram of radar sensor. Explain its operation.	[5]
Q.4(a)	Draw the block diagram of wireless senor node. Write down the characteristics requirement of wireless sensor node.	[5]
Q.4(b)	Explain how wireless sensor can be used in Precision agriculture.	[5]
Q.5(a)	Transfer function of an instrumentation system is 2(s+5)/[s(s+2)(s+6)]. Find out the A B C D parameter.	[5]
Q.5(b)	Justify the necessity of development of mathematical model of a physical system. What are the challenges in development of the mathematical model of the physical system?	[5]