Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

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

END SEMESTER DEGREE EXAMINATIONS, NOVEMBER - 2018

SUBJECT: BIOMEDICAL INSTRUMENTATION [ICE 3102]

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

Instructions to candidates
- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A	Draw the diagram of Man Instrumentation system and explain the functions of each part.	5
1B	With the equivalent circuit for a pair of electrodes, explain metal electrolyte interface and Electrolyte-Skin interface.	3
1C	Write the differences between conventional X-ray technique and Computed tomography.	2
2A	What is 'M' mode display in an ultrasound system? Discuss on the working of the instrument used in medical practice based on M-mode display.	4
2B	Distinguish between 'A' and 'B' scan displays with the help of a diagram. Discuss on the common applications of these two types of scan modes.	3
2C	Explain the process of peritoneal dialysis with the schematic and write the two differences between peritoneal dialysis and haemodialysis.	3
3A	Illustrate the principle of ultrasonic Doppler-shift flow-velocity meter. Explain the working of Doppler-shift blood flowmeter with the help of a block diagram.	4
3B	Explain the Korotkoff method for measurement of blood pressure.	3
3C	Describe various types of electrosurgery techniques employed in practice with necessary sketches.	3
4A	What is NMR? Explain the functions of individual sub-systems of NMR imaging system with a block diagram.	4
4B	What are incubators? Describe the different modes of incubator with diagram.	4
4C	Mention four different applications of X-ray examination.	2
5A	With a block diagram explain various components of X-ray machine.	4
5B	Explain the working of a Atrial synchronous pacemaker with the help of a block diagram and timing diagram.	3
5C	Describe the working of different sections of CT machine with necessary diagram.	3

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