Reg. No. : | | | | | | | | | | | |

K 4408

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

Eighth Semester

Mechatronics Engineering

MH 1451 — MEDICAL MECHATRONICS

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is medical mechatronics?

2. List out ECG Machine's major components and devices.

3. Compare the characteristics of Inductive Transducer with capacitive transducers.

4. List any four Bio sensor applications.

5. What is CMRR in signal conditioning?

6. What are the advantages of magnetic recorder?

7. What is meant by artificial ventilator?

8. What is telemetry?

9. What are the major steps in digital filtering?

10. What are the advantages of frequency domain technique?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the important features of medical Mechatronics and also explain the general measurement system for medical instruments. (16)

Or

(b) Explain the different failures and it causes and also explain the trouble shooting procedure for ECG and EMG. (16)

12. (a) Explain the different types of chemical transducers and its principles and also explain how these transducers are used in medical field. (16)

Or

(b) Write short notes on :

(i) Selection of transducers. (8)

(ii) Nano sensors. (8)

13. (a) (i) What is Op-Amp? Explain the usage of Op-Amp in signal conditioning. (12)

(ii) What is power Amplifier? (4)

Or

(b) Explain the working principle of electron microscope with neat sketch. (16)

14. (a) Explain about different types of blood flow measurement. (16)

Or

(b) What are the different types of laser equipments used in medical field and explain any one in detail. (16)

15. (a) How are computers and information technology playing a major role in medical field? Explain (16)

Or

(b) Explain in detail about Bio-medical diagnostic Instrumentation. (16)

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