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

Question Paper Code : 80403

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

EI 6704 — BIOMEDICAL INSTRUMENTATION

(Common to Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What are the analogy between engineering systems and human systems?

2. Define viscoelastic.

3. What is meant by Mean Arterial Pressure (MAP)?

4. What is meant by Plethysmograph?

5. Draw the standard ECG waveform.

6. What is meant by macro shock?

7. Define contrast.

8. What is biometrics?

9. State ventricular fibrillation.

10. Define Electrotherapy.

PART B — (5 × 16 = 80 marks)

11. (a) Describe the Biomechanics of Bone with suitable sketches. (16)

Or

(b) (i) Explain about the sensors and transducer types frequently used in biomedical application. (10)

(ii) What are the characteristics considered for designing medical equipment? (6)

12. (a) (i) Explain the measurement technique for cardiac output using indicator dilution method. (8)

(ii) Explain the Lung volumes and capacities with suitable diagram. (8)

Or

(b) What are oximeter? Describe finger tip oximeter with suitable diagram. Mention its advantages. (16)

13. (a) Explain in detail about EEG lead system, recording methods and waveform. (16)

Or

(b) Discuss in detail :

(i) Microelectrode (8)

(ii) Depth and needle electrode (4)

(iii) Surface electrode (4)

14. (a) Explain in detail about the hardware and instrumentation of Computer Tomography. (16)

Or

(b) Explain the concept of analysis of digital images. (16)

15. (a) Draw the block diagram of a ventilator along with its accessories and explain its function. (16)

Or

(b) What is dialysis? Explain the principle of operation of a dialyser machine with a neat block diagram. (16)

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