0705

Code : 9EC-63

Register Number | | | | | | | |

VI Semester Diploma Examination, Nov./Dec., 2012

E & C BOARD

MEDICAL ELECTRONICS

Time : 3 Hours] **[Max. Marks : 100**

Instructions : (1) Question No. **1** is *compulsory*.
(2) Answer any **two** full questions from each of the remaining Sections.

SECTION – I

1. (a) Fill in the blanks : **5**
   (i) The T-wave in ECG represents _____ of ventricles.
   (ii) The Korotkoff sounds are used in the measurement of _____.
   (iii) The glass electrode is mostly used for _____ measurement.
   (iv) The _____ cells are widely used as pacemaker batteries.
   (v) X-ray imaging makes use of the principle of _____.

   (b) Explain single channel telemetry system. **5**

SECTION – II

2. (a) Discuss the constraints in design of Medical Instrument System. **8**
   (b) Explain typical cell potential waveform. **4**
   (c) List the types of Electrodes. **3**

3. (a) Explain ECG with waveform. **8**
   (b) Explain 10-20 electrode system of EEG. **7**

4. (a) Explain the working of EMG system with a neat block diagram. **6**
   (b) What is EEG ? List various frequency bands of it. **3**
   (c) List the applications of ECG, EEG and EMG. **6**

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SECTION – III

5.	(a)	Explain the working of Electrotherapeutic Stimulator.	8
	(b)	What are implantable Pacemakers ? Mention its types.	5
	(c)	What are Defibrillators ?	2
6.	(a)	Explain Microprocessor Controlled Ventilator with a neat block diagram.	8
	(b)	Explain haemodialyser with a neat block diagram.	7
7.	(a)	Explain the working of Coulter method Blood Cell counter.	8
	(b)	Explain the operation of Spectrophotometer.	7

SECTION – IV

8.	(a)	Explain MRI equipment unit with a neat block diagram.	8
	(b)	Mention the properties of X-rays.	5
	(c)	List different types of Lasers.	2
9.	(a)	Describe Bedside Patient Monitor with the help of a block diagram.	8
	(b)	List the uses of bio-telemetry.	3
	(c)	Mention the essential parameters for telemedicine.	4
10.	(a)	Describe micro and macro shock.	5
	(b)	Explain physiological effect of radiation exposure.	5
	(c)	List E-waste and its ill effects.	5

0545

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Register Number | 1 | 1 | 9 | E | C | 0 | 9 | 0 | 5 | 7 |

VI Semester Diploma Examination, May 2012

E & C BOARD

MEDICAL ELECTRONICS

Time : 3 Hours] **[Max. Marks : 100**

Instructions : (1) Section – **I** is *compulsory*.

(2) Answer any **two** full questions from the remaining sections.

SECTION – I

1. (a) Fill in the blanks : **5**

(i) The nerve cells present in the brain are called Neuron.

(ii) The blood pressure of a normal young man is 120/80 mm of Hg.

(iii) pH value of a neutral solution is 7.

(iv) Laser is used as a blood less knife in surgery.

(v) The process of blood purification by an artificial kidney is called. Dialysis

(b) Write a note on E-wastes and its ill-effects on environment. **5**

SECTION – II

2. (a) What are bioelectric potentials ? Name any six biopotential sources. **5**

(b) Explain the term 'Action Potential' of the cell with neat sketch. **5**

(c) What is the need for electrodes ? Mention the types. **5**

3. (a) Explain briefly typical ECG waveform. **5**

(b) Draw the block diagram of EEG system and explain the function of each block. **10**

4. (a) What is EMG ? Explain the EMG system with necessary block diagram. **7**

(b) List the applications of EMG. **3**

(c) Write a brief note on ERG. **5**

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SECTION – III

5. (a) What is the need for defibrillator ? Mention the types. List any two advantages of D C defibrillator. 5

(b) Explain the working of ventricular synchronous demand pacemaker. 7

(c) What is a ventilator ? Mention the need for it. 3

6. (a) What is meant by diathermy ? Explain Ultrasonic diathermy unit with block diagram. 7

(b) Explain the working of haemodialyser with block diagram. 8

7. (a) List the types of blood cells and explain their importance. 6

(b) Explain the operation of spectrophotometer with neat sketch. 9

SECTION – IV

8. (a) List the characteristics and applications of LASERS. 6

(b) Explain the working of X-ray machine. 9

9. (a) List any two uses, advantages and disadvantages of CT Scan. 6

(b) Explain briefly the principle of MRI. 4

(c) Write a note on ultrasound imaging. 5

10. (a) Explain single channel telemetry system with block diagram. 6

(b) List any four applications of Telemedicine. 4

(c) Mention any five preventive measures to reduce shock hazards. 5
