Total No. of Questions : 12] [Total No. of Pages : 2

P1122

[3664]-222
B.E. (Electronics)
BIOMEDICAL ELECTRONICS
(2003 Course)

sem II

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

Instructions :

1) *Answers to the two sections should be written in separate books.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Explain the process of polarization, depolarization and repolarization with the help of neat diagrams. [9]

b) What do you mean by relative refractory period and absolute refractory period. Compare with resting potential and action potential. [9]

OR

Q2) a) Draw the set-up of Two Electrode equivalent circuit. Explain the process for measurement of biopotential and a half cell potential. [9]

b) Describe the transducers which are used for biomedical applications with reference to following parameters i) Force, ii) Pressure, iii) Temperature. [9]

Q3) a) What is Einthorens triangle? Explain its significance with the help of neat sketch. [8]

b) Explain the working of ECG machine with isolated patient lead. [8]

OR

Q4) a) With the help of neat diagram, explain the finger plethysmography for peripheral pulse monitoring. [8]

b) Describe the ultrasonic blood flow meters with neat diagrams. [8]

Q5) a) What is vectorcardiography? Explain with typical normal loop patterns recorded in three planes on the direct writing vectorcardiograph. [8]

b) Explain the working of bedside patient monitoring with necessary diagrams. [8]

OR

P.T.O.

Q6) a) What are the basic requirements of implantable pacemaker? With the help of block diagram, explain the operations of ventricular synchronous demand pacemaker. [8]

b) Explain the DC and AC defibrillators with necessary diagram. [8]

SECTION - II

Q7) a) Draw the neat block schematic of Flame photometer. Explain its working with its essential pacts. [9]

b) Describe the operations of PCO_2 machine with the help of neat sketch. [9]

OR

Q8) a) Name the different methods of cell counting. Explain any one in detail. [9]

b) Explain the difference between medical CRO and conventional laboratory CRO. Explain the non-fade CRO and its features. [9]

Q9) a) Draw the schematic diagram of an EEG machine. Explain with the help of pictorial representation of closely spaced electrodes. [8]

b) Explain the 10-20 system of Electrode placement. [8]

OR

*Q10)*a) What are the different methods of EEG recording. Explain in detail. [8]

b) Draw the block diagram of a typical EMG-set-up. Explain the procedure to perform EMG. [8]

*Q11)*a) Explain the Basic steps required to form LASER Beam. [8]

b) State the applications of LASER in Medicine. Explain any two applications in detail. [8]

OR

*Q12)*a) Define : [8]

i) X-ray radiations.

ii) Ionizing radiations.

iii) Non-ionizing radiations.

iv) Gamma radiations.

b) Explain the Doppler ultrasound and 3-D ultrasound imaging in detail. [8]

❐❐❐