17545

15162

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Illustrate your answers with neat sketches ***wherever*** *necessary.*
(3) Figures to the ***right*** *indicate* ***full*** *marks.*
(4) Assume suitable data, if ***necessary****.*

Marks

1. A) Attempt **any three** : **12**

a) Draw the diagram of sphygmomanometer and state its working principle.

b) State working principle of Pulse oximeter.

c) List four technical specification heart rate meter.

d) State the concept of vector cardiography.

B) Attempt **any one** : **6**

a) State and draw Einthoven's triangle of potential difference across the heart. Also show bipolar lead connection.

b) Draw fault finding tree for EEG machine.

2. Attempt **any four** : **16**

a) Draw block diagram of direct blood pressure measuring system and state its working principle.

b) List four technical specification of respiration rate meter.

c) List the importance of microphone amplifier and earphone in hearing aid and suggest which types of deficiency of human body it can overcome.

d) Describe 1mV calibration network in ECG machine with suitable diagram.

e) Draw the pre-amplifier circuit of EMG and describe it.

f) List four technical specifications of phonocardiography.

3. Attempt **any four** : **16**

a) State the concept of relative Bp measurement.

b) Draw the block diagram of fetal heart rate meter and describe it.

c) Draw four different EEG signal with respect to time.

d) How four sounds are produced during one complete cardiac cycle ?

e) Draw unipolar limb leads connection in ECG.

P.T.O.

Marks

4. A) Attempt **any three**: **12**

a) Draw the diagram of spirometer and give its working principle.

b) Draw block diagram of pure tone Audiometer and state function of each block.

c) List six unipolar chest leads.

d) Describe generation of EMG signal.

B) Attempt **any one** : **6**

a) Draw circuit of isolated input section of ECG and explain i) Right led drive circuit ii) Wilson's network circuit.

b) Draw figure of 10-20 method of EEG electrode and list them.

5. Attempt **any four** : **16**

a) Draw block diagram of digital temperature meter and explain function of each block.

b) List four technical specifications of spirometer.

c) Draw block diagram of GSR meter and describe it.

d) Compare between ECG and PCG. (any 4 points).

e) Define following respiratory parameter i) the residual volume ii) Expiratory capacity iii) Inspirator reserve volume iv) Vital capacity.

f) State and explain motor and sensory nerve conduction wrt. EMG.

6. Attempt **any four** : **16**

a) Draw fault finding path tree for ECG machine.

b) Sketch the Ear response for conduction through air and conduction through bone.

c) State Beer's and Lamberts law.

d) Sketch response and diagram of i) EMG generated ii) EMG generated by electrical stimulation during voluntary.

e) List any 4 application of audiometer.
