



17545

21415

3 Hours/100 Marks

Seat No.

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- 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.**
(5) **Use of non-programmable Electronic Pocket Calculator is permissible.**
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MARKS

1. A) Attempt **any three** : 12
- a) Draw a block diagram of digital temperature meter and give four specification of it.
 - b) Explain blood pressure waveform.
 - c) Illustrate the following methods of calculation of heart rate :
 - i) Average
 - ii) Bit to Bit.
 - d) Describe the generation of ECG signal.
- B) Attempt **any one** : 6
- a) Draw and describe the block diagram of Wilsons n/w used in ECG m/c and explain its importance.
 - b) State the trouble shooting procedure and maintenance of EEG machine.
2. Attempt **any four** : 16
- a) Explain digital blood pressure meter with the help of neat diagram.
 - b) Explain the concept of fetal heart rate with the help of neat diagram.
 - c) Draw block diagram of pure tone audiometer. Give the importance of microphone and amplifier.
 - d) List eight technical specifications of ECG machine.
 - e) Describe motor and sensory nerve conduction in EMG system.
 - f) Draw a block diagram of PCG machine and explain its operation.
3. Attempt **any four** : 16
- a) Give four technical specifications of sphygmomanometer.
 - b) Give four technical specifications of heart rate meter.
 - c) List four different types of EEG signal and draw its waveform with respect to time.
 - d) Distinguish between ECG and PCG (any four points).
 - e) Explain the concept of vector cardiography.

P.T.O.



4. A) Attempt **any three** : 12
- a) Define following respiratory parameters :
 - i) Tidal volume
 - ii) Expiratory Capacity (EC)
 - iii) Vital capacity
 - iv) Expiratory reserve volume.
 - b) State Galvanic skin reflex. Draw block diagram of GSR meter and explain its operation.
 - c) Draw and explain 1 mV calibration network in ECG.
 - d) State in brief the trouble shooting procedure of EMG machine.
- B) Attempt **any one** : 6
- a) List ECG recording techniques and explain any one in detail.
 - b) State the generation of EEG signal and also state four specification of EEG m/c.
5. Attempt **any four** : 16
- a) Draw a block diagram of pulse oxymeter and state the function of each block.
 - b) Explain respiration rate meter with the help of block diagram.
 - c) With the help of suitable diagram explain the working principle of hearing aids.
 - d) State the different types of heart sound and their significance.
 - e) Explain the working principle of spirometer with the help of suitable block diagram.
 - f) Explain preamplifier circuit of EMG m/c.
6. Attempt **any four** : 16
- a) Draw right lead drive circuit in ECG machine and state its importance.
 - b) Draw and explain Bekesy audiometer with suitable diagram.
 - c) State Beer and Lamberts law. Give four technical specification of pulse oxymeter.
 - d) State the maintenance procedure of EMG machine. Draw EMG waveform label it.
 - e) Describe air and bone conduction related to hearing mechanism.
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