



Name :

Roll No. :

Invigilator's Signature :

**CS/B.Tech(EIE-N)/SUPPLE/SEM-8/EI-801D/2010
2010**

BIOMEDICAL AND ECOLOGICAL MEASUREMENTS

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

i) What is the range of resting potential ?

- a) – 60 μ V to – 100 μ V
- b) – 600 μ V to – 1000 μ V
- c) – 60 mV to – 100 mV
- d) – 600 mV to – 1000 mV.

ii) What is the pH level for arterial blood of normal human body ?

- a) 6.90 b) 7.00
- c) 7.40 d) 7.80.

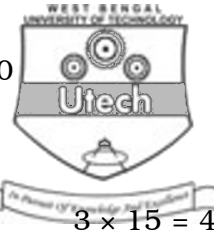


- iii) In EEG measurement what is the frequency range for θ band ?
- a) Below 3.5 Hz b) 3.5 Hz to 8 Hz
- c) 8 Hz to 13 Hz d) Above 13 Hz.
- iv) Systolic blood pressure of a normal person is
- a) 20 to 70 mm of Hg b) 40 to 90 mm of Hg
- c) 60 to 110 mm of Hg d) 80 to 130 mm of Hg.
- v) Bradycardia means
- a) relatively slower heart rate
- b) relatively faster heart rate
- c) normal heart rate
- d) not related to heart.
- vi) How many leads are used for standard ECG measurement ?
- a) 4 b) 6
- c) 9 d) 12.
- vii) What is the typical voltage for R peak of electrocardiac wave ?
- a) 0.25 mV b) 0.40 mV
- c) 0.80 mV d) 1.60 mV.
- viii) What is the range for 'Let-go' current in biomedical application ?
- a) 1 to 5 mA b) 5 to 8 mA
- c) 8 to 20 mA d) More than 20 mA.

- ## GROUP – B

Answer any *three* of the following. $3 \times 5 = 15$

- SE-92



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.

3 × 15 = 45

7. a) What is Pacemaker ? Discuss the classifications of pacemaker. What are the different pacing modes ?
b) How can computer be utilized in biomedical application ? 5 + 10
8. How is X-ray generated ? Explain the principle of CAT and compare its method of visualization with conventional X-ray methods. Explain with neat sketch the arrangement and operation on image intensifier. 5 + 5 + 5
9. a) What is fibrillation ? State different types of fibrillation.
b) Explain *ac*-defibrillation and *dc*-fibrillation with diagrams.
c) Discuss the merits and demerits of *ac*-defibrillation and *dc*-fibrillation. 4 + 7 + 4
10. a) What are the different types of data processed in biotelemetry ?
b) In biotelemetry why is FM system preferred ?
c) What are subcarrier and carrier and what are frequency ranges ?
d) Describe with block diagrams one of the transmitting systems as well as receiving systems. 3 + 2 + 4 + 6
11. Write short notes on any *three* of the following : 3 × 5
- a) Severinghas electrode
 - b) Sphygmomanometer
 - c) Los Angeles Smog
 - d) Doppler application in blood flow measurement
 - e) Global warming
 - f) Phonocardiogram.
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