Printed Pages : 3

EIC032

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 132852

Roll No. | | | | | | | | | | |

B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15

BIO-MEDICAL SIGNAL PROCESSING

Time : 3 Hours] [Total Marks : 100

Note : Attempt all the problems.

1 Justify the validity of following statements with reasons : (any four) 5×4=20

(a) "Tonometer is used for Eye pressure measurement".

(b) "EEG is used for waves of neurons".

(c) "ECG is used for cardiac measurement".

(d) "Log sigmoid function (Log sin x) is most eminently used in Neurons".

(e) "Ethovien triangle use to provide complete information of heart".

(f) "Self organizing maps (SOM) is used in Neurons".

2 Answer any two parts of the following : **10×2=20**

(a) ECG record of a patient is shown below. Name P, Q, R, S, T wave, prove that patient is abnormal.

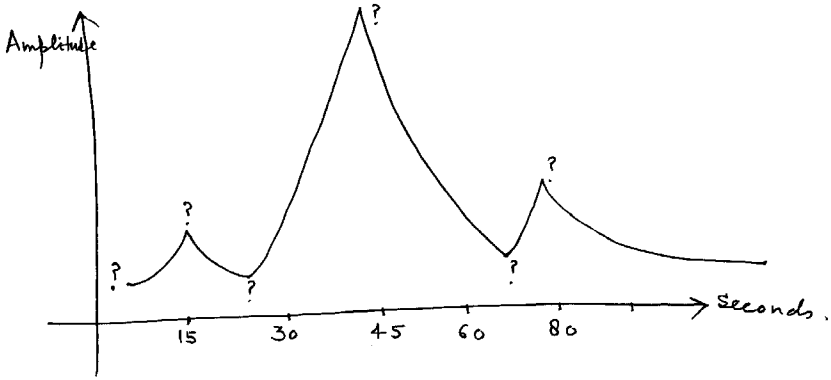

Fig. 1

(b) Discuss Arrthythmia analysis in detail. How and where it is used ? Explain the role of theta (θ) wave.

(c) Explain the details of base line Wander and power line interference in detail. Why and where they are used ?

3 Answer any two parts of the following : **10×2=20**

(a) Discuss Huffman Coding in detail. How it is modified ? Explain in detail.

(b) Discuss tuning point Algorithm in detail. How and where it is used ?

(c) Explain Run length coding in detail. How and where it used ?

4 Answer any two parts of the following : **10×2=20**

(a) Discuss the model of neurons, with its signal processing. Differentiate in between

(i) Dynamic and sleep EEG

(ii) Bt & AR method.

(b) Discuss Maximum Likehood Method for EEG analysis. Differentiate it w.r.t ARMA method.

(c) Discuss following filters used in Biomedical Signal processing.

(i) Adaptive

(ii) Prediction

(iii) Matched

(iv) LMS adaptive filter.

5 Write short notes on : (any four) **5×4=20**

(a) Wavelet detection

(b) Epilepsy transition

(c) Noise Cancellation

(d) Brain Waves

(e) Image Recognition

(f) Moving Average Method

(g) Detection and Estimation.