Total No. of Questions : 8]

SEAT No. :

P3612

[Total No. of Pages : 2

[4959] - 1098
B.E. (Electronics & Telecommunication)
BIOMEDICAL SIGNAL PROCESSING
(2012 Pattern) (End Semester)

Time :2½ Hours] *[Max. Marks :70*

Instructions to the candidates:-

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Use of Calculator is allowed.***
5) ***Assume Suitable data if necessary.***

Q1) a) What is a function of Electromyography? Enlist the types of EMG and explain the procedure to perform EMG. **[8]**

b) Draw and explain unipolar and bipolar arrangement of ECG acquisition. **[6]**

c) Write a short note on STFT. **[6]**

OR

Q2) a) Write a note on direct and indirect blood pressure measurement. **[8]**

b) Explain PAN TOMPKINS algorithm to detect QRS segment from acquired ECG signal. **[6]**

c) Explain various heart sounds generated in the pumping activity of heart. **[6]**

Q3) a) Draw and explain 10-20 electrode placement for acquisition of EEG. **[8]**

b) Explain various EEG waveforms with their frequency and significance. **[8]**

OR

Q4) a) Draw and explain structure of brain. **[8]**

b) Explain grounding and shielding techniques. **[8]**

Q5) a) Write a note on ECG amplifier and isolation circuit. **[8]**

b) Describe basics of low pass filtering and high pass filtering for bio signals. **[8]**

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OR

Q6) a) Explain the technique to cancel out maternal ECG from fetal ECG. **[8]**

b) Write requirement of basic amplifier and Explain the use of instrumentation amplifier. **[8]**

Q7) a) Describe the significance of Principal component analysis for biosignals analysis. **[10]**

b) State the differences between FIR and IIR filters for biosignal analysis.**[8]**

OR

Q8) a) Distinguish between stationary and non-stationary bio signals. Also state the edge effects due to sampling a finite length data sequence. **[10]**

b) For an input represented by X(z) and output given by Y(z),State the generalized transfer function H(z) in terms of b(k) and a(k) as coefficients of numerator and denominator respectively and state a method to find the frequency spectrum of the same. **[8]**

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