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Total Number of Pages : 01

B.Tech
PCBM4304

6th Semester Back Examination 2018-19
BIOMEDICAL SIGNAL PROCESSING
BRANCH : AEIE, BIOMED, ECE, EIE, ETC, IEE
Time : 3 Hours
Max Marks : 70
Q.CODE : F128

Answer Question No.1 which is compulsory and any FIVE from the rest.
The figures in the right hand margin indicate marks.

- Q1 Answer the following questions : (2 x 10)**
- a) What are the parameters by which action and resting potential depends on?
 - b) What is the significance of input impedance and frequency in determining the performance of bio medical system?
 - c) Explain various artifacts in biomedical system?
 - d) What are the advantages of data compression technique in biomedical system?
 - e) Why STFT is suitable for speech processing?
 - f) It is observed that the shape of a square wave pulse does not change when applied to an unit gain amplifier. Find its bandwidth with justification.
 - g) State two important characteristics of physiological potentials
 - h) Which electrode is best suited for EEG and why?
 - i) Which configuration of OPAMP is used for biomedical application and why?
 - j) Write down the various Frequency bands of EEG signals
- Q2 a) Explain the electrical activity of the heart with the help of a diagram. Draw a typical ECG waveform and level it. (5)**
- b) Explain resting and action potential with a typical cell potential waveform. (5)**
- Q3 a) What is the principle of a general electrode used in biomedical signals. Explain various electrodes used for measurement of EEG signal (5)**
- b) With a neat diagram explain various segmentation of ECG signal (5)**
- Q4 a) With suitable diagram describe of blood flow measurement. (5)**
- b) Briefly describe various biomedical signal analysis used for writing signal waveforms. (5)**
- Q5 a) Determine Z-transform of a discrete square wave signal of time duration $n = 5$ to $n = 10$ with amplitude 2 volts. (5)**
- b) Explain temperature transducers used in Biomedical sources (5)**
- Q6 With a neat block diagram explain the biomedical instrumentation system (10)**
- Q7 What is the difference between active and passive filter? Draw the circuit of a 2nd order active low pass filter. Derive the expression of the transfer of the filter in terms of circuit components (10)**
- Q8 Write short answer on any TWO : (5 x 2)**
- a) Wavelet Transform
 - b) Noise sources in biomedical systems
 - c) EMG & ROG signals