

B TECH
(SEM VIII) THEORY EXAMINATION 2017-18
BIO-MEDICAL SIGNAL PROCESSING

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20

- a) What are the bio medical signals?
- b) What is data acquisition in medical?
- c) What is QRS complex?
- d) Where turning point algorithm is used?
- e) What is the use of FAN algorithm?
- f) What is use of Measurement of Amplitude and Time Intervals in ECG?
- g) What is Neurological Signal Processing?
- h) What is sleep EEG?
- i) What is matched filtering?
- j) What is overlapping wavelet?

SECTION B

2. Attempt any three of the following: 10 x 3 = 30

- a) Explain what is Role of Computers in the Analysis, Processing, and Monitoring & Control in bio-medical field?
- b) Explain any three approaches for QRS detection?
- c) Discuss the turning point algorithm to reduce the sampling frequency of an ECG signal from 300 samples per second to 200 samples per second.
- d) State in detail the dynamics of sleep-wake transition?
- e) Discuss the discrete wavelet series and discrete wavelet transform and its application biomedical signal analysis?

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10

- a) Write notes on :
 - (i) Electro-retinography
 - (ii) Electro cardiography
- b) Write note on:
 - (i) Electroencephalography
 - (ii) Electromyography

4. Attempt any one part of the following: 10 x 1 = 10

- a) Describe the various arrhythmia monitors methods in health care system?
- b) Discuss Portable Arrhythmia Monitors in detail?

- 5. Attempt any *one* part of the following: **10 x 1 = 10****
- a) Discuss Huffman coding in detail? How is it modified, Explain?
 - b) Discuss Run Length Coding in detail?
- 6. Attempt any *one* part of the following: **10 x 1 = 10****
- a) Discuss about The ARMA Methods and Maximum Likelihood Method?
 - b) Discuss about Periodogram and Maximum Entropy Method.
- 7. Attempt any *one* part of the following: **10 x 1 = 10****
- a) What is adaptive wavelet detection method? Specify two critical parameters which determine the stability of LMS algorithm?
 - b) Discuss adaptive noise canceling approach and its application in biomedical signal?