

Roll No. ....

Total Pages : 3

**206605**

**May, 2019**

**B.Tech. EIC VI SEMESTER**

**Bio-Medical Instrumentation (EI-316-C)**

Time : 3 Hours]

[Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

**PART-A**

1. (a) How biomedical electrical signals are different from simple electrical signals? (1.5)
- (b) Give examples of multi channel signals. (1.5)
- (c) Why implants are given this name? (1.5)
- (d) Explain why laser is not a non coherent source of light? (1.5)
- (e) What is the B.W required for the CRO's used in Biomedical signal analysis? (1.5)

- (f) Define a biomedical image. How it is different from simple image? (1.5)
- (g) What type of amplifiers is used in biomedical signal amplifications? Why? (1.5)
- (h) From where do pacemakers gets energy? (1.5)
- (i) Which of the two, High BP or Low BP is more dangerous? Why? (1.5)
- (j) Why do we require processing of biomedical signals? (1.5)

### **PART-B**

2. (a) Explain the history of recording systems. Draw any one circuit used for low level recordings and explain their working. (10)
- (b) Differentiate between the working of preamplifiers and main amplifiers. (5)
3. (a) Explain the concept of multichannel display. (5)
- (b) Draw and explain the block diagram of EEG right from signal acquisition to processed signal. Explain each block. How many types of EEG signals we are getting in case of different patients. (10)
4. Why do we require a PMS? Draw its block diagram and explain the various parameters controlled by PMS regarding a human body. (15)

5. (a) Compare DC defibrillators and implant defibrillators in short. (5)
- (b) "External pacemaker is equally good as natural pacemaker", Justify the statement. If not then up to what percentage it works? What are the challenges for an artificial pacemaker to work at par with natural pacemaker? (10)
6. (a) Name some of the applications of telemetry in patient care. (7.5)
- (b) What is bio-telemetry? Which physiological parameters are adaptable while adopting this technology? (7.5)
7. Write short notes on :
- (a) He-Ne LASER and its advantages and disadvantages.
- (b) Ruby LASER and its advantages and disadvantages. (15)
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