[Total No. of Questions - 9] [Total No. of ted Pages - 2]
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16219(D) - 0 DEC 2016

B. Tech 7th Semester Examination

Biomedical Electronics (NS)

EC-411(b)

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one question from each of section A, B, C and D. Section E is compulsory.

SECTION - A

1. What are the desired characteristics in any transducer? How an Ultrasound blood velocity measurement can be done using Doppler effect? (20)

2. Explain the capacitive transducers? How a capacitive microphone works? (20)

SECTION - B

3. What is EMG? What is the frequency range and amplitude range of EMG signal? (20)

4. Which electrode would be suitable for measurement of potentials from the positions VI and V2 in ECG measurement? (20)

SECTION - C

5. With the help of suitable diagram, explain various respiratory volumes and also give their inter-relations? (20)

6. What is Westergreen method? For which measurement, it is used? (20)

- 0 DEC 2016

SECTION - D

7. In Magnetic Resonance Imaging, what problems may be encountered with metallic implants? Explain the role of Hydrogen ions in MRI. (20)

8. What are the levels of "let go current", Cardiac Fibrillation, Respiratory arrest, organ burn etc? What is more dangerous, voltage or current? (20)

SECTION - E

9. (i) Which EEG component has highest frequency?

   (ii) Which wave is considered unwanted when larger than .3 mV, in Lead II, V4, V5 and V6?

   (iii) Which vein carries oxygen rich blood?

   (iv) Which part of the body is responsible for generation of blood cells?

   (v) What carries oxygen and nutrients to the foetus in pregnancy?

   (vi) What is a defibrillator? How it helps in cardiac functioning?

   (vii) What are the common noises in ECG? How to avoid them?

   (viii) Provide the list of planes in EEG.

   (ix) Which instrument is a mechanical amplifier, and widely used?

   (x) What is ERG? (2×10=20)