

**FACULTY OF ENGINEERING**

**B.E. 4/4 (ECE) I – Semester (New) Examination, December 2017**

**Subject: Electronic Instrumentation**

**Time: 3 Hours**

**Max. Marks: 75**

**Note: Answer All Questions from Part-A & Answer Any five Questions from Part-B.**

**Part – A (25 Marks)**

- 1) Define accuracy and Precision of a measurement. (3)
- 2) Explain the difference between IEEE standards and Measurement standards. (2)
- 3) What is Radioactivity and which Instrument is used to measure radioactivity? (2)
- 4) How are Photo emissive and Photo voltaic transducers differ?  
Give one example of each transducer. (3)
- 5) What is Dew point? Define Relative humidity. (2)
- 6) What is Phon? How it is related to SPL. (2)
- 7) What are the advantages of Digital Voltmeter over Analog Volt Meter? (2)
- 8) Explain the Virtual Instrumentation concept with examples. (3)
- 9) Using Action potential diagram of a cell, explain Na-K pump. (3)
- 10) Compare Ultrasonic and Magnetic Resonance Imaging (3)

**Part – B (50 Marks)**

- 11)a) Explain type of errors that occur in measurement. What are the methods used to eliminate or estimate the errors ? (5)  
b) A 500 volt DC voltmeter has an accuracy of 2% of full range. Calculate the limiting error when the instrument is to read 125 V DC. (5)
- 12)a) What is the principle of Inductive transducer. Explain the functioning of LVDT with a transfer function characteristic. (6)  
b) Compare the three Photo conductive transducers with examples. (4)
- 13)a) Why sound is measured in dB. Write short notes on the types of microphones with diagram. (4)  
b) Define and explain the thermodynamic laws. How is thermocouple used for measurement of temperature? (6)
- 14)a) With a neat block diagram, explain the principle and functioning of a Dual slope digital voltmeter. (5)  
b) What is the use of Delayed Time base Oscilloscope in measurements? Explain using waveforms, the operation of a Delayed time base Oscilloscope. (5)

- 15)a) Write on Bio-potential electrodes and their specific application. Compare X ray and CT scan imaging techniques. (6)
- b) What is EMG, explain 10-20 electrode configuration of EEG and the signals that are recorded with amplitude and frequency. (4)
- 16)a) What is the principle of Hotwire anemometer fluid velocity measurement? Explain the constant current and constant voltage type of anemometers. (5)
- b) Explain the block diagram of a Digital storage oscilloscope. What is the advantage of it over Analog storage oscilloscope? (5)
- 17) Write short notes on two of the following
- a) IEEE Standards (5)
- b) Principle of Wheatstone bridge for strain measurement (5)
- c) Brief on ECG (5)



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