A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59B51

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Open elective

Civil Engineering

15UBM951 –BIOMEDICAL INSTRUMENTATION SYSTEMS

(Common to CSE, ECE, EEE, EIE, Mechanical, IT, Chemical)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The sweep generator of a CRO is used to produce CO1- R

   (a) Sinusoidal voltage for the horizontal deflection of electron beam

   (b)Saw tooth voltage for the vertical deflection of electron beam

   (c) Sinusoidal voltage for the vertical deflection of electron beam

   (d) Saw tooth voltage for the horizontal deflection of electron beam

2. Output of sweep and time base generator will be CO1- R

   (a) sinusoidal waveform (b) cos waveform

   (c) saw tooth waveform (d) both a and b

3. The graphic record of the heart sound is called _____. CO2- R

   (a) Phonocardiogram (b) Photoplethesmography

   (c) ECG (d) EEG.

4. An EEG measures: CO2- R

   (a) Brain waves (b) Emotional response

   (c) Heart rate (d) Galvanic skin response

5. Input offset current is evaluated by,_____. CO3- R

(a)) $|I_{OS}| = I_B^+ + I_B^-$ (b) $I_{OS} = I_B^+ + I_B^-$ (c) $|I_{OS}| = I_B^+ - I_B^-$ (d) $I_{OS} = I_B^+ - I_B^-$

6. In the internal circuit of an Operational Amplifier, _____ is used as the buffer. CO3- R

(a) Push Pull amplifier (b) Emitter Follower

(c) Differential Amplifier (d) Common Emitter

7. Indicator dilution method is used to measure CO4- R

(a) cardiac output (b) blood flow (c) pulse rate (d) none of above

8. 120 to 140 mm of mercury is an adults normal CO4- R

(a) systolic pressure (b) diastolic pressure

(c) peristalsis pressure (d) water pressure

9. Value of pH is determined by_____. CO5- R

(a) pH electrode (b) pH detector (c) pH balancer (d) pH pectrometer

10. A manometer is used to measure the pressure of a CO5- R

(a) Heavy liquids (b) Light liquids

(c) Both light as well as heavy liquids (d) None of the above

PART – B (5 x 2= 10Marks)

11. Define polarized and non-polarized electrodes? CO1- U

12. The R wave amplitude in lead II is 0.71.Then what is the sum of R wave amplitude in other two leads. CO2- App

13. Define 'slew rate'. When does it start showing its effect on amplifier performance CO3- R

14. List the methods of pulse measurement. CO4- R

15. Distinguish the colorimeter and spectrophotometer CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain in detail about the Surface and needle electrode. CO1- Ana (16)

Or

(b) Explain the characteristics of resting potential, with reference to Goldman's and Nernst equation CO1- Ana (16)

17.	(a)	Draw the modern EEG unit and explain the functions.	CO2- U	(16)
		Or		
	(b)	Discuss different lead configuration used in ECG recording	CO2- U	(16)
18.	(a)	Explain the power and efficiency of ECG-Bio amplifier..	CO3- U	(16)
		Or		
	(b)	Draw the circuit diagram of Darlington pair isolation amplifier and explain	CO3- U	(16)
19.	(a)	List the various methods of Blood flow measurement and explain any one method.	CO4- U	(16)
		Or		
	(b)	Explain the different methods in pulse rate measurement with necessary diagrams.	CO4- U	(16)
20.	(a)	Explain the working principle of flame photometer with necessary diagrams.	CO5- U	(16)
		Or		
	(b)	Explain about colorimeter and spectrophotometer with neat sketches.	CO5-U	(16)