

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

EndTerm Examination (Regular/Backlog), Nov.-Dec.2015

B. Tech/ M. Tech (as applicable) in Engineering, Semester

Roll No.....

ECE 722-Bio Medical Engineering

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark)

10

- i. The Galvanic Skin Response (GSR) measurement is used to know the
 - a) cardiac activity of heart
 - b) functional activity of heart
 - c) dermal activity of sweat gland
 - d) none of these.
- ii. How many numbers of current injecting electrodes are used in tetrapolar impedance measurement technique ?
 - a) 1 b) 3
 - c) 4 d) 2.
- iii. Which of the following should be as high as possible for a measuring instrument?
 - a) Signal to noise ratio b) Hysteresis
 - c) Range d) Frequency response.
- iv. Central patient monitoring stations usually monitor upto patient(s).
 - a) one b) four
 - c) eight d) thirty.
- v. The upper limit of blood pressure is known as
 - a) systolic pressure b) Normal Pressure
 - b) diastolic pressure c) none of these
- vi. The frequency range of ECG wave is
 - a) 0.05 – 100 Hz b) 0.5 – 160 Hz
 - c) 0.05 – 160 Hz d) 10 – 100 Hz.
- vii. Apnoea is
 - a) absence of breathing b) absence of heartbeat
 - c) kidney failure d) none of these.
- viii. The part of your body that controls movements is called
 - a) muscles b) tissue
 - c) skeletal muscles d) all
- ix. The heart pumps blood with back to the lungs.
 - a) oxygen b) carbon dioxide c) white blood cells d) chicken soup

x.	When you exhale, the diaphragm _____ a) relaxes b) moves up c) pushes air out of lungs d) all of the above	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	Explain action and resting potential with complete waveform.	
ii.	Explain the parts of Nervous System?	
iii.	What is the need of Gel in Bio potential measurement?	
iv.	Explain the theory behind the Electrodes.	
Q.3A	What is patient care monitoring? Explain its component in brief. What are the problems associated with it?	05
Q.3B	Give a brief classification of instruments for diagnosis of X-rays & explain anyone of them.	05
Q.4A	Explain the application of pacemakers in heart patients. What is Fibrillation and how it can be dangerous for a patient.	05
Q.4B	Explain the active and passive transducers in detail with their classification and their importance in biomedical field.	05
Q.5A	Write the signal characteristics of ECG.	05
Q.5B	What are the physiological effects of electric current on human body? What are micro shock and macro shock?	05
Q.6A	Draw the block diagram of the ECG machine, explaining the function of each block.	05
Q.6B	What do you mean by The Muscular System? Explain the type of Muscular System.	05
OR		
Q.6B	Explain difference between Echocardiography and Phonocardiography.	05
Q.7A	Explain the blood pressure measurement.	05
Q.7B	With neat schematic diagram explain the principle of pH measurement.	05
OR		
Q.7B	What are the different components of a patient monitoring system? Explain with neat block diagram. What parameters does it measure?	05
Q.8	How blood volume is measured in human being. Why human pulse rate is less than that of birds. Explain with waveform.	10
Q.9A	Discuss the cardiovascular system of human being with proper block diagram.	10
Q.9B	Explain Components of Magnetic Resonance Imaging with suitable diagram.	10
OR		
Q.9B	What is EMG? Draw the block diagram of EMG measurement and explain the need for each block.	10