ACS COLLEGE OF ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

Clinical Instrumentation -II Lab

Prelab & Postlab questions (2015-2016)

YEAR	**III YEAR**
SEMESTER	**VI SEM**
SUBJECT NAME	**CLINICAL INSTRUMENTATION LAB-II**
SUBJECT CODE	**10BML68**

CYCLE 1

1. What is Sampling?

2. What is under sampling?

3. What do you mean by sample and hold circuit?

4. What is the function of buffer amplifier in sample and hold circuit?

5. Define Amplitude Shift Keying

6. What are the applications of ASK?

7. What is the relationship between the minimum bandwidth required for an FSK system and the bit rate?

8. Where do you find the application of PAM?

CYCLE 2

1. What Is Audiometer?

2. Why Audiometry Is Performed?

3. What are the parameters or levels on which hearing disability is measured?

4. what are the different lung volumes and capacities?

5. Is there any limit to infusion rate for syringe pump?

6. What are the advantages and disadvantages of syringe pumps over other infusion pump devices?

CYCLE 3

1. How to store ph electrode?

2. Should I stir my sample during pH measurement?

3. What is the difference between a combination electrode and a sensing electrode with a reference cell?

4. What is the difference between percent transmittance (%T) and absorbance (A)?

5. What is Lambda max? How is it determined for various samples?

Post lab questions

1. Design and Test the Notch Filter for 50 Hz
2. Design and Testing of Instrumentation amplifier for different gains.

Content beyond syllabus

Infusion pump

Aim: Testing of an infusion pump

Apparatus: Infusion pump, IV fluid, IV fluid set , power chord.

Principle:

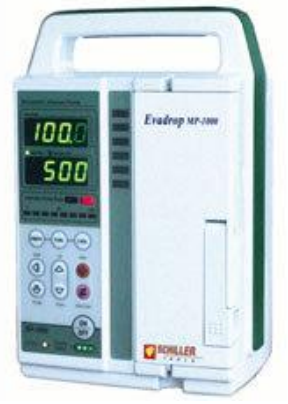
An external infusion pump is a medical device used to deliver fluids into a patients body in a controlled manner. There are many different type of infusion pumps which are used for a variety of purposes and in a variety of environment.

Infusion pumps may be capable of delivering fluids in a large or small amount and may be used to deliver nutrients or medication such as insulin and other antibiotics, chemotherapy, drugs & pain relievers.

Procedure:

1. Connect the IV fluid to the IV fluid set and lock the IV fluid set in the infusion pump using the lock switch.
2. Connect the power chord to the infusion pumpand connect it to the main power supply and switch on the main power supply.
3. Press On, set the total volume of the infusion pump to 50ml/hour by pressing T. volume button on the infusion pump. up and down button to set the total volume.
4. Set the flow rate using F.rate button. start the infusion pump by pressing the start start button.

5. Note down the IV fluid delivery readings for every minute in tabular column.
6. Plot the graph.



Tabular Column:

Sl No	Total volume of fluid IV in ml	Flow rate set value ml/hr	Time in seconds	IV fluid delivered in ml

Result:

Testing of Infusion pump is verified.

ACS COLLEGE OF ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

Clinical Instrumentation -II Lab

Prelab & Postlab questions (2016-2017)

YEAR	**III YEAR**
SEMESTER	**VI SEM**
SUBJECT NAME	**CLINICAL INSTRUMENTATION LAB-II**
SUBJECT CODE	**10BML68**

CYCLE 1

1. What is Sampling?

2. What is under sampling?

3. What do you mean by sample and hold circuit?

4. What is the function of buffer amplifier in sample and hold circuit?

5. Define Amplitude Shift Keying

6. What are the applications of ASK?

7. What is the relationship between the minimum bandwidth required for an FSK system and the bit rate?

8. Where do you find the application of PAM?

CYCLE 2

1. What Is Audiometer?

2. Why Audiometry Is Performed?

3. What are the parameters or levels on which hearing disability is measured?

4. what are the different lung volumes and capacities?

5. Is there any limit to infusion rate for syringe pump?

6. What are the advantages and disadvantages of syringe pumps over other infusion pump devices?

CYCLE 3

1. How to store ph electrode?

2. Should I stir my sample during pH measurement?

3. What is the difference between a combination electrode and a sensing electrode with a reference cell?

4. What is the difference between percent transmittance (%T) and absorbance (A)?

5. What is Lambda max? How is it determined for various samples?

Post lab questions

1. Design and Test the Notch Filter for 50 Hz
2. Design and Testing of Instrumentation amplifier for different gains.

Content beyond syllabus

Infusion pump

Aim: Testing of an infusion pump

Apparatus: Infusion pump, IV fluid, IV fluid set , power chord.

Principle:

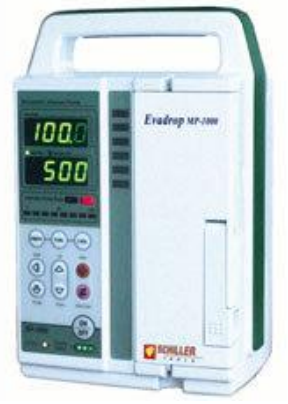
An external infusion pump is a medical device used to deliver fluids into a patients body in a controlled manner. There are many different type of infusion pumps which are used for a variety of purposes and in a variety of environment.

Infusion pumps may be capable of delivering fluids in a large or small amount and may be used to deliver nutrients or medication such as insulin and other antibiotics, chemotherapy, drugs & pain relievers.

Procedure:

1. Connect the IV fluid to the IV fluid set and lock the IV fluid set in the infusion pump using the lock switch.
2. Connect the power chord to the infusion pumpand connect it to the main power supply and switch on the main power supply.
3. Press On, set the total volume of the infusion pump to 50ml/hour by pressing T. volume button on the infusion pump. up and down button to set the total volume.
4. Set the flow rate using F.rate button. start the infusion pump by pressing the start start button.

5. Note down the IV fluid delivery readings for every minute in tabular column.
6. Plot the graph.



Tabular Column:

Sl No	Total volume of fluid IV in ml	Flow rate set value ml/hr	Time in seconds	IV fluid delivered in ml

Result:

Testing of Infusion pump is verified.

ACS COLLEGE OF ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

Clinical Instrumentation Lab

Prelab & Postlab questions (2017-2018)

YEAR	**III YEAR**
SEMESTER	**5th Semester**
SUBJECT NAME	**CLINICAL INSTRUMENTATION LAB**
SUBJECT CODE	**15BML58**

CYCLE 1

Prelab Questions

1. What is an operational amplifier?

2. What are differential gain and common-mode gain of a differential amplifier?

3. Define CMRR.

4. In what way is the voltage follower a special case of the non-inverting amplifier?

5. What are the applications of an inverting amplifier?

6. Op-amp is used mostly as an integrator than a differentiator. Why?

7. What do mean by a Schmitt trigger?

8. How many types of Schmitt trigger used?

9. What do you mean by threshold voltage of Schmitt trigger?

CYCLE 2

1. What is under sampling?

2.What do you mean by sample and hold circuit?

3. What is a defibrillator?

4. When is a defibrillator used?

5. How does a defibrillator work?

6.Where in the body are pacemakers implanted? How do they work?

7.Explain 10-20 Electrode system in EEG?

8.Explain different lead configurations in ECG?

9. What is Tachycardia , Bradicardia?

10. What are ranges of Delta, Theta, Alpha, Beta?

11. What are various electrodes used in EMG?

12. What is sigificance of AV node?

13. What is Enthovian triangle?

CYCLE 3

1. What does spirometry measure?

2. What do the different parameters within spirometry testing mean?

3. What's the difference between spirometry measurement and peak flow reading?

4. Explain what is the cochlea in the ear?

5. What Is Audiometer?

6. Why Audiometry Is performed?

7.Why keratometer is used?

Postlab

1. Calibration & testing of syringe infusion pump.

2.Design a non inverting amplifier with a gain of +5 using opamp.

Content beyond syllabus

Infusion pump

Aim: Testing of an infusion pump

Apparatus: Infusion pump, IV fluid, IV fluid set , power chord.

Principle:

An external infusion pump is a medical device used to deliver fluids into a patients body in a controlled manner. There are many different type of infusion pumps which are used for a variety of purposes and in a variety of environment.

Infusion pumps may be capable of delivering fluids in a large or small amount and may be used to deliver nutrients or medication such as insulin and other antibiotics, chemotherapy, drugs & pain relievers.

Procedure:

1. Connect the IV fluid to the IV fluid set and lock the IV fluid set in the infusion pump using the lock switch.
2. Connect the power chord to the infusion pumpand connect it to the main power supply and switch on the main power supply.
3. Press On, set the total volume of the infusion pump to 50ml/hour by pressing T. volume button on the infusion pump. up and down button to set the total volume.
4. Set the flow rate using F.rate button. start the infusion pump by pressing the start start button.

5. Note down the IV fluid delivery readings for every minute in tabular column.
6. Plot the graph.

Tabular Column:

Sl No	Total volume of fluid IV in ml	Flow rate set value ml/hr	Time in seconds	IV fluid delivered in ml

Result:

Testing of Infusion pump is verified.