

4.7.5.3 Line Isolation Monitor

A **line isolation** monitor (LIM) puts relatively large impedance from either secondary lead through an ammeter to ground of isolation transformer. If there is a conductive path through the equipment as shown in fig (b) the meter in the LIM will read a current. The meter on the LIM is calibrated to read the current flowing through a short circuit fault. An alarm in the LIM is usually set-off when a short circuit fault between secondary lead and ground would draw 2-5 mA current. This alarm indicates that the backup system has failed and the equipment is no longer isolated. If the equipment is critically needed, the LIM alarm may be overridden.

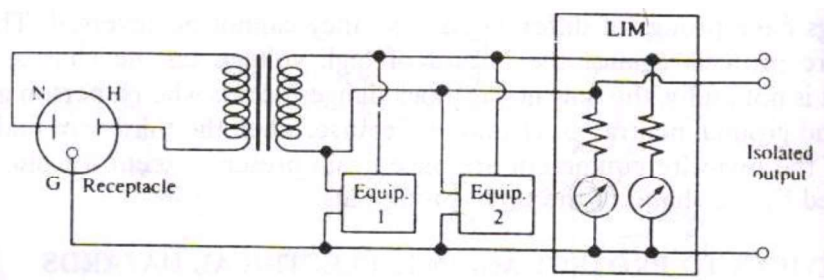


Fig 4.7.5.3 Line Isolation Monitor

TWO MARKS

1) What are the advantages of biotelemetry system

The advantages of biotelemetry systems are

- (i). It is used to record the biosignals over long periods and while the Patient is engaged in his normal activities.
- (ii). The medical attendant or computer can easily diagnose the nature of Disease by seeing the telemeter biosignals without attending patient Room
- (iii). Patient is not disturbed during recording.
- (iv). For recording on animals, particularly for research, the biotelemetry is greatly used.

2) Specify the frequencies used for biotelemetry

Wireless telemetry system uses modulating systems for transmitting biomedical signals. Two modulators are used here. A lower frequency sub-carrier is employed in addition to very- high frequency (VHF). This transmits the signal from the transmitter.

3) What is a radio-pill

The radio pill is capable of measuring various parameters. With the help of radio pill type devices, it is possible for use to measure or sense temperature, pH, enzyme activity, and oxygen tension values. These measurements can be made in associated with transducers. Pressure can be sensed by using variable inductance, temperature can be measured by using temperature-sensitive transducer.

4) What are the devices used to protect against electrical hazards?

- i). Ground fault interrupt
- ii). Isolation transformer

5) What are the two methods of shortwave diathermy?

The two methods of shortwave diathermy are

- i) Capacitive method
- ii) Inductive method

6) Define Let-go current

Let – go current is the minimum current to produce muscular contraction.

For men—about 16mA

For Women—about 10.5 Ma

7) Define – Micro Shock

A physiological response to a current alied to the surface of the heart that results in unnecessary stimulation like muscle contractions or tissue injury is called as microshock.

8) Define – Macro Shock

A physiological response to a current applied to the surface of the body that produces unwanted stimulation like tissue injury or muscle contractions is called as macro shock.

9) What is meant by diathermy?

Diathermy is the treatment process by which, cutting coagulation of tissues are obtained.

10) List the types of diathermy.

The types of diathermy are

- i) Short wave diathermy
- ii) Microwave diathermy
- iii) Ultrasonic diathermy
- iv) Surgical diathermy

11) What are the different types of current that are used for medical applications?

The different types of current are Threshold current, pain current, let-go current, paralysis current, fibrillation and defibrillation current.

16 MARKS

1. Discuss in detail about different types of diathermy units?How is the frequency of operation selected for this type?(16)
2. Discuss the Electrical accident in hospital.(16)
3. Explain working principle of a electro surgical diathermy unit with a neat block diagram.(8)
4. Explain how electrical hazards can be rectified in hospitals.(8)