

# MODEL TEST PAPER

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SUBJECT CODE: EL-306

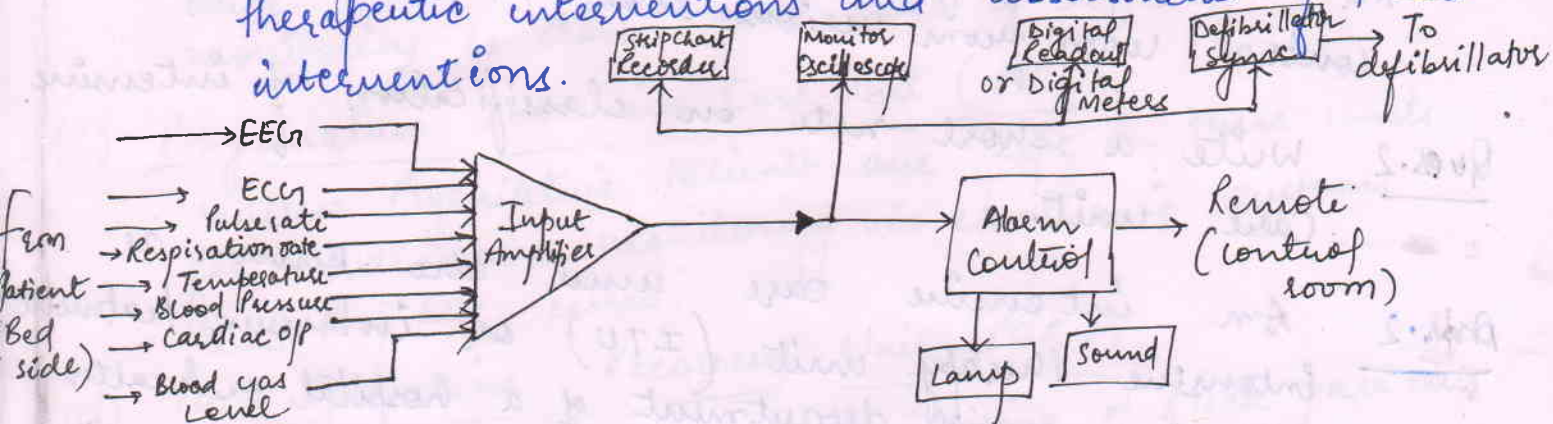
BRANCH: ELECTRONICS

2017-18

Ques. 1 What do you understand by Bed Patient Monitoring System (BPMS)? Explain the Bed side Monitor with neat block diagram.

Ans. 1 Continuous measurement of patient parameters such as heart rate and rhythm, respiratory rate, blood pressure, blood-oxygen saturation and many other parameters have become a common feature of the care of critically ill patients. When accurate and immediate decision making is crucial for effective patient care, electronic monitors are used to collect and display physiological data.

Patient Monitoring can be defined as repeated or continuous observations or measurements of the patient his or her physiological function, and the function of life support equipment, for the purpose of guiding management decisions, including when to make therapeutic interventions and assessment of those interventions.



Block diagram of Bed side Monitor

Electrodes and Transducers are attached to the patients provide signals through an array of i/p amplifiers to the local bedside monitors. From the body of Bed Patient the bio electrical signal is received via ECG pre amplifier. After picking up the bed patient's heart related bio medical signals continuous analog output is measured via meters and displayed. Blood Pressure (systolic and diastolic pressures), temperature, pulse rate etc. parameters are continuously measured and displayed by the meters. In case of emergency (critical condition / out of limit), using sound and red light alarms a warning is given or produced which is further transferred as an information signal to the remote control room. ECG pre amplifier output is also recorded on Strip Chart Recorder on demand. There is a visual display unit (CRO) also available apart from strip chart recorder and in the situation / condition if the pacing is missing, via defibrillator sync defibrillator can be brought into use. In Coronary Care Units, Pacer and Defibrillators are a must in those units. All these signals (information) are further transmitted to control room from various such bed side monitors.

Ques. 2 Write a short note on classification of intensive care unit.

Ans. 2 An intensive care unit also known as intensive therapy unit (ITU) or intensive treatment unit is a special department of a hospital or health care facility that provides intensive treatment medicine. Intensive care units cater to patients with severe and life threatening illnesses and injuries, which require constant, close monitoring and support from

specialist equipment and medications in order to ensure normal bodily functions. (2)

Intensive Care Unit (ICU) can be classified as the following:

- (a) Neo-Natal-ICU (NICU)
- (b) Pediatric-ICU-(PICU)
- (c) Psychiatric-ICU-(PICU)
- (d) Post operative Recovery Unit (PORU) or  
Post Anaesthetic Unit (PAU)
- (e) Coronary Care Unit (CCU)

(a) Neo Natal ICU:

Newly born babies who are suffering from serious diseases or severely injured are kept in these units to save their lives. Using electronic systems, continuous monitoring is done and cure is provided.

(b) Pediatric Intensive Care Unit (PICU):

Children of age (1 to 13) who are suffering from serious diseases or severely injured are kept in these units and via electronic systems the continuous monitoring is done and cure is done.

(c) Psychiatric Intensive Care Unit (PICU):

Serious Psychiatric Patients are kept in these units for continuous monitoring via electronic systems and they are cured.

(d) Post operative Recovery Unit (PORU):

After surgery, continuous monitoring of such patients who have undergone major surgery where anaesthesia is also given to patients, such patients are transferred to these units where continuous monitoring is done via electronic systems till the patient comes back to his normal senses.

(c) Coronary Care Unit (CCU) :

Patients suffering from heart related diseases are kept in these units for continuous monitoring. Instruments like pacers, Defibrillators and Ventilators etc. are present in such units and are used.

Ques. 3 Name different types of bio electrodes. Describe construction of a suction cup electrode.

Ans. 3 (Medical) Bio-electrodes can be classified in the following two categories:

- (a) Macro electrodes
- (b) micro electrodes

Bio (medical) Electrodes

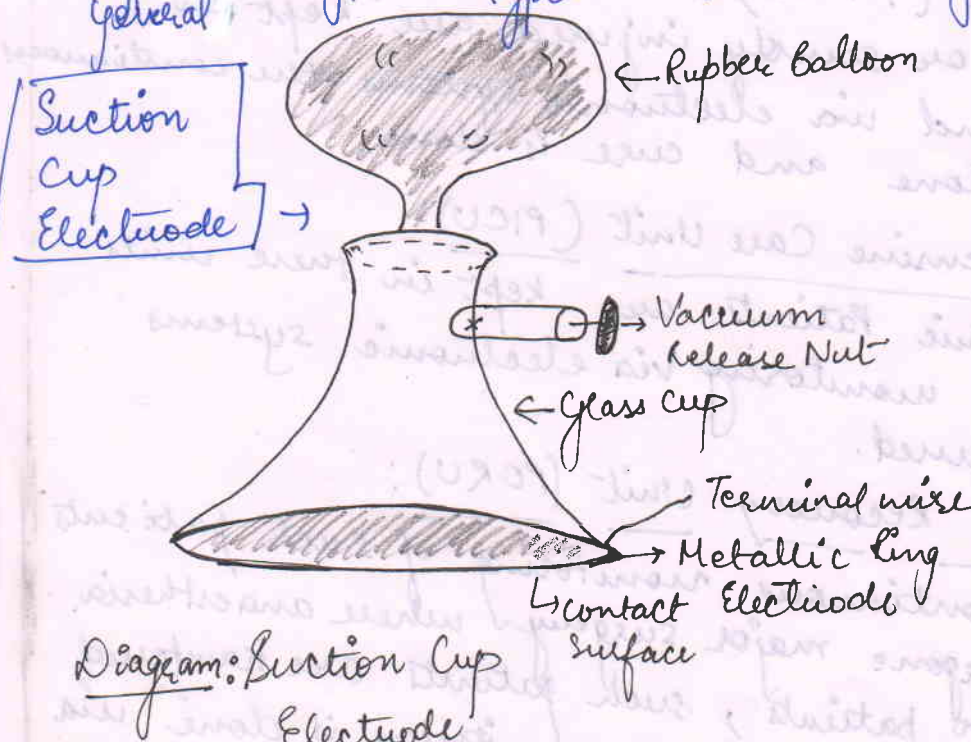
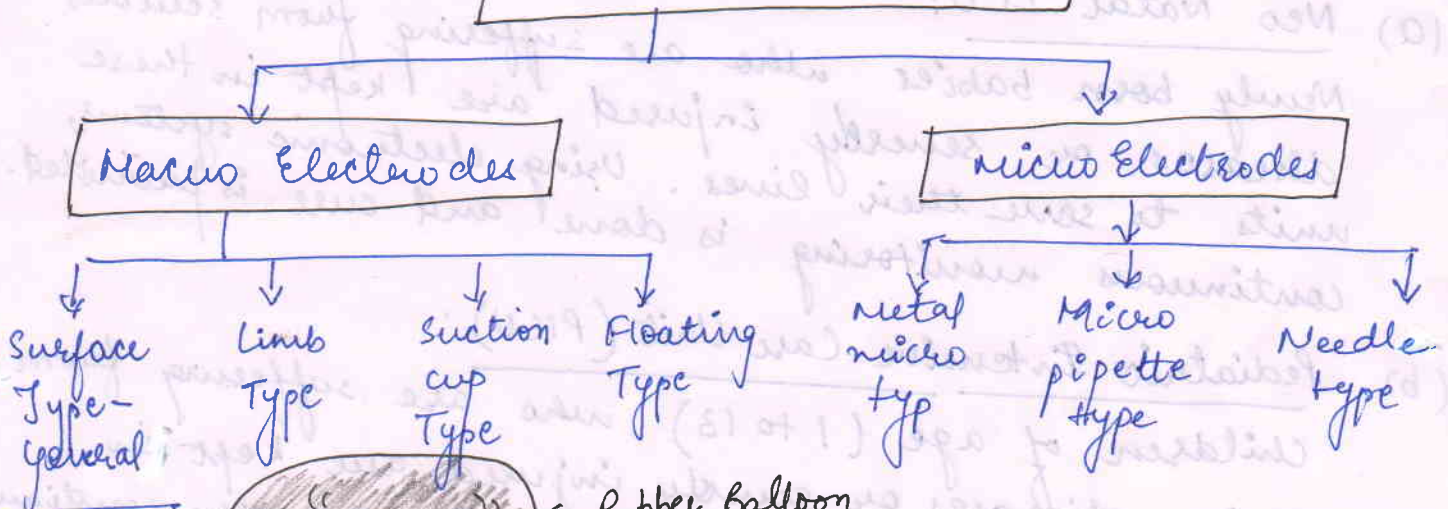


Diagram: Suction Cup Electrode

## Construction:

(3)

This type of electrode is used in ECG as it can be easily placed from one place to another.

It is a hollow metallic cylindrical electrode, the base of electrode make a contact with the skin

In its construction, a metallic rim <sup>is used,</sup> with a glass cup and at the open end of glass cup, a rubber balloon is used. There is a terminal available at the cylinder that is connected with the lead wire.

Electrolyte paste is applied on the contact surface of the electrode and then the rubber balloon is squeezed and after that it is kept on the chest of (electrode)

the patient and slowly the rubber bulb or balloon is released, as a result the vacuum is created between skin and electrode. and as a result the electrode sticks to the skin in a tight position.

Such electrodes can be used only for a short period of time.

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