

[LD 0212]

**AUGUST 2013**  
**B.Sc CRITICAL CARE TECHNOLOGY**  
**THIRD YEAR**  
**Paper II – ICU EQUIPMENTS**

Sub.Code :1222

**Time : Three hours**

**Q.P Code : 801222**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on :**

**(3X10=30)**

1. What is Renal replacement therapy ? Name the Modalities. Indications and complications of Dialysis.
2. Indications and Complications of Mechanical Ventilation. Add a note on adjunctive therapies for a ventilated patient.
3. What are the troubleshooting airway emergencies in a ventilated patient. Enumerate the important steps in airway maintenance ?

**II. Write Notes on:**

**(8x5=40)**

1. Primary survey under Trauma Evaluation.
2. Automated External Defibrillator .
3. Glasgow coma scale.
4. Precautions to be taken before urinary catheterisation .
5. Indications and complications of Exchange Transfusion.
6. Algorithm for Advanced Cardiac Life support -Pulseless Arrest.
7. Benefits of Epidural Analgesia. Essential observations to be made in a patient with epidural catheter.
8. Indications of central venous line placement.

**III. Short Answers on:**

**(10x3=30)**

1. Indications of Sengstaken Blakemore tube .
2. Indications of Arterial Blood gas analysis – indications .
3. Guidelines for chest tube removal .
4. What are the vasopressors used in critical care unit ?.
5. Lumbar puncture- indications.
6. Advantages and Disadvantages of Enteral Nutrition.
7. What is cardiac arrest and its types ?
8. Contraindications to gastric lavage.
9. Indications of Intracranial pressure monitoring .
10. Draw the waveforms of ECG (Electrocardiogram) and its implications .

[LF 0212]

**AUGUST 2014**  
**B.Sc CRITICAL CARE TECHNOLOGY**  
**THIRD YEAR**  
**Paper II – ICU EQUIPMENTS**  
**Q.P Code : 801222**

**Sub.Code :1222**

**Time: Three hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. A 50 year old lady has presented with acute onset chest pain. An ECG needs to be done. When an ECG is done, there are waveforms which are much distorted, making diagnosis very difficult. How will you troubleshoot such a problem. Also explain the steps taken to clean the machine at the end of the procedure.
2. What are the various methods of decontamination used in the intensive care unit? Also classify giving examples the various types of gadgets used in the intensive care units based on the proximity to the patient. Explain the various types of sterilization used.
3. A 40 year old obese lady has been started on Non-invasive ventilation (NIV) for sleep apnoea, as advised by the pulmonologist. She is feeling very uncomfortable on the NIV. What all could be the reasons for the discomfort and how do you troubleshoot them.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. Methods of calibration of medical equipments.
2. Preventive maintenance of ECG machines.
3. Various safety alarms on mechanical ventilators.
4. Management sudden hypoxia on a ventilated patient.
5. Procedures to clean home BIPAP machines.
6. Safety precaution while using defibrillators.
7. Daily check list for checking ventilators.
8. Safety features of electrical equipments to prevent accidental electrocution.

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Define autoclaving.
2. What is earthing of electrical equipments?
3. Enumerate any two methods to clean humidifiers.
4. What is the immediate step one should take as soon as a patient on BIPAP ventilator starts desaturating?
5. What are the 3 steps you take when the leads keep falling off the chest of the patient while trying to take an ECG?
6. Write any 2 important things which one needs to check on a daily basis on defibrillators.
7. What are the checks which need to be performed before taking a multichannel monitor on an intrahospital transport?
8. What are the two important things one should check before starting an infusion on syringe pump?
9. What will do if you see visibly soiled ventilator tubing on a patient getting mechanically ventilated?
10. Write down the alarm limits of airway pressure on a patient getting mechanical ventilation for diazepam overdose.

\*\*\*\*\*

[LG 0215]

FEBRUARY 2015

Sub.Code :1222

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR**

**Paper II – ICU EQUIPMENTS**

*Q.P Code : 801222*

**Time: Three Hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Describe about oxygen delivery systems and write a note on non- re-breathing mask.
2. Mention the Techniques, Indications and contraindications of Gastric lavage and write a note on activated charcoal.
3. Describe types of defibrillators. Mention the steps of Synchronized Cardioversion.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. Mention the various colour coding of intravenous cannulas with their sizes and mention their infusion rates.
2. Write a note on plasmapheresis.
3. Write a note on Laryngeal mask Airway and its uses.
4. Describe about the Incentive spirometer.
5. How to approach to high pressure alarm in the Mechanical Ventilator?
6. Describe about T- piece breathing system.
7. What are the indications for emergency dialysis?
8. What are the steps for the decontamination of the suction equipments?

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Enumerate the types of Blood pressure measurement.
2. Write a note on Reservoir Bag.
3. Describe about the ECG paper.
4. Write a note on Thermometer.
5. Note on CPAP Ventilation.
6. Mention the normal arterial blood gas values.
7. What are the methods to confirm endotracheal tube position and placement?
8. Notes on Haemofiltration.
9. Define Disinfectant.
10. Enumerate the different types of supraglottic airway equipments.

\*\*\*\*\*

[LH 0815]

AUGUST 2015

Sub.Code :1222

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR**

**Paper II – ICU EQUIPMENTS**

*Q.P Code : 801222*

**Time: Three Hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Explain in detail about Hospital Waste Management.
2. Describe Non invasive ventilation. Write about BiPAP ventilation.
3. Describe the mechanism of pulse oximetry and add a note on its pitfalls.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. How to approach to low pressure alarm in ventilator?
2. Write briefly about oxygen cylinder.
3. Describe about the peritoneal dialysis. Add a note on its indication and contraindications.
4. What are the Mechanical methods of deep vein thrombosis (DVT) prophylaxis?
5. How to monitor endotracheal tube cuff pressure in the critically ill patients?
6. Discuss possible errors in recording electrocardiogram.
7. Describe about principle of non invasive Blood pressure measurement.
8. Describe about various types of nebulizer and add a note on jet nebulizer.

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Write a note on Autoclave.
2. What is Synchronization in Defibrillator?
3. What are the indications for Percutaneous Endoscopic Gastrostomy (PEG) feeding tube?
4. Draw diagram of Endotracheal tube and label it's parts.
5. Note on oxygen flow meter.
6. Write a note on Transducer Zeroing.
7. Describe the sequence of Defibrillation.
8. Narrate about Hudson face mask.
9. Notes on Co-Oximeter.
10. How to place the ECG electrodes?

\*\*\*\*\*

[LI 0216]

FEBRUARY 2016

Sub.Code :1222

**B.Sc. CRITICAL CARE TECHNOLOGY  
THIRD YEAR**

**Paper II – ICU EQUIPMENTS**

*Q.P Code : 801222*

**Time: Three Hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Describe about oxygen delivery systems and Write a note on Non- Re-breathing mask.
2. Mention the Techniques, Indications and contraindications of Gastric lavage and write a note on activated charcoal.
3. Describe types of defibrillators? Mention the steps of Synchronized Cardioversion.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. Mention the various colour coding of intravenous cannulas with their sizes and mention their infusion rates.
2. Write a note on plasmapheresis.
3. Write a note on Laryngeal mask Airway and its uses.
4. Describe about the Incentive spirometer?
5. How to approach to hypoxia in the Mechanical Ventilator?
6. Describe about T- piece breathing system.
7. What are the indications for Emergency Dialysis?
8. What are the steps for the decontamination of the suction equipments?

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Non invasive blood pressure.
2. Write a note on Reservoir Bag.
3. Describe about the ECG paper.
4. Write a note on Thermometer.
5. Note on CPAP Ventilation.
6. List the sites for arterial blood gas sample.
7. What are the methods to confirm endotracheal tube position and placement?
8. Notes on Haemofiltration.
9. Define Disinfectant.
10. Enumerate the different types of supraglottic airway equipments.

\*\*\*\*\*

**B.Sc. CRITICAL CARE TECHNOLOGY**  
**THIRD YEAR**  
**Paper II – ICU EQUIPMENTS**  
*Q.P Code : 801222*

**Time: Three Hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What are the common vital parameters that would be monitored on a multi parameter monitor? Write in detail about the setting up for IBP monitoring and the procedure of zeroing?
2. Write the indication of APRV mode and explain in detail about functioning of APRV mode.
3. Write down the names of the equipments used in ICU for monitoring, therapeutic and diagnostic purposes under separate headings and their specific uses against each of the equipment.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. Write short notes on the mechanism of CPAP including the indications.
2. What are the causes for low peak inspiratory pressure alarm and how do you troubleshoot the same?
3. How many triggering (sensitivity) types are available in mechanical ventilators? Write briefly about each of them.
4. What are the special settings you would consider to set up when you connect the mechanical ventilator to an intubated ARDS patient?
5. Write short notes on the stepwise weaning process that you would follow before extubation.
6. Write short notes on Incentive spirometer and its uses in ICU.
7. Name the parameters directly measured by Blood Gas Analyzer and name the parameters derived from the measured ones.
8. Write short notes on oxygen toxicity.

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Name any of the two equipments which measure peripheral oxygen saturation of a patient?
2. What are the tests done to evaluate patient's suitability for extubation?
3. Name some of the personal protective equipments used by persons who are intubating a patient?
4. Write down the names of the five sites of the placement of chest electrode leads on the chest while you are connecting the monitor.
5. In which mode of the mechanical ventilation, pressure support is more beneficial? How does pressure support helps in that mode?
6. What is the difference between pressure support and IPAP?
7. Draw a normal ECG waveform curve and label the specific points of the wave form pattern.
8. Draw the Bain's circuit and label the parts.
9. Draw a normal scalar graph of pressure Vs Time of mechanical ventilation and label the inspiratory phase and expiratory phase.
10. Name two anticoagulants that are commonly used in ABG analysis.

\*\*\*\*\*

**B.Sc. CRITICAL CARE TECHNOLOGY  
THIRD YEAR**

**Paper II – ICU EQUIPMENTS**

*Q.P Code : 801222*

**Time: Three Hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What are the causes for High peak inspiratory pressure alarms? List them in detail and write the methods of trouble shooting each of the cause?
2. What are the indications, contra indications, advantages and disadvantages of Non-Invasive mechanical ventilation? Write each in detail.
3. Write down the pre use check calibration procedure of a mechanical ventilator.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. Name the common chemical agent used for chemical sterilization, its strength, preparation, life span and the types of items sterilized using this agent.
2. What are the two ventilator settings that would impact oxygenation and two settings that would impact PaCO<sub>2</sub>?
3. Write short notes on the importance of humidification during mechanical ventilation.
4. What is the normal range of cuff pressure used in ET tube? Write down the three important benefits of the adequate inflation of the cuff.
5. Define auto PEEP and what step you would take to troubleshoot auto PEEP?
6. Write short notes on Biphasic Defibrillator.
7. List out the various alarms you witness during mechanical ventilation.
8. Short notes on zeroing for IBP monitoring.

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Write down the internationality coded colors for different Venturi devices and their respective percentage of oxygen delivery.
2. What will happen if cuff pressure is kept higher than the required level during mechanical ventilation?
3. What is the role of flow sensor in mechanical ventilation?
4. What are the parameter settings that you set up in APRV mode?
5. What are the color codes used for disposing wastes and write down the specific types of wastages disposed in each color coded container?
6. Write the principle on which ASV mode is functioning.
7. What is the difference between 12 lead and 5 lead ECG?
8. Write down 3 precautionary steps that you will take just before discharging electric shock to the patient through defibrillator?
9. Define electrocardiogram.
10. Write down the normal range of pH, PaCO<sub>2</sub> and PaO<sub>2</sub> in an arterial blood?

\*\*\*\*\*

[LL 0817]

AUGUST 2017

Sub.Code :1222

**B.Sc. CRITICAL CARE TECHNOLOGY  
THIRD YEAR**

**Paper II – ICU EQUIPMENTS**

*Q.P Code : 801222*

**Time: Three Hours**

**Maximum : 100 Marks**

**Answer All Questions**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What are the basic common modes of invasive mechanical ventilation? Write brief notes on each mode of ventilation.
2. Define Sterilization, name the methods (types) of different sterilization techniques and write autoclaving method in detail.
3. What are the sites considered for collection of blood for arterial blood gas analysis and which is the most preferred site? Write in detail about the procedure of collection of blood including site, preparation, type of syringe, preferable anticoagulant and the factors that may adversely interfere in the accuracy of ABG results.

**II. Write Notes on:**

**(8 x 5 = 40)**

1. What are Base excess and write their significance?
2. What are the roles or function of each bottle in three bottle system of chest drainage?
3. Describe the preparation of used pneumatic circuit for Gas sterilization.
4. Explain the assessment of Glasgow Coma Scale.
5. Write down the six steps of Hand washing.
6. Write short notes on Defibrillator.
7. Write down the indication and steps of open Endotracheal tube suctioning?
8. Write down the names of the equipments to be kept in the Intubation tray.

**III. Short Answers on:**

**(10 x 3 = 30)**

1. Define pH.
2. In a patient breathing at a rate of 10/minute with an I:E ratio of 1:2, What is the inspiratory time in seconds?
3. Interpret the following ABG result:  
pH: 7.2; PaCO<sub>2</sub> : 25 mmHg, HCO<sub>3</sub> : 8 mmol/lit.
4. In which colored bags, would you dispose an infected gauze piece and food wastes?
5. What is the condition in which you would find an elevated covered up ST segment in an ECG tracing?
6. What is the mean arterial blood pressure if the actual blood pressure of the patient is 70/40 mmHg?
7. Write one important difference between Ambu bag and Bain's circuit?
8. What are the difference between syringe pump and Infusion pump?
9. What is earthing to enable us for safe usage of electric power driven equipments in ICU?
10. Write down the current sequence of action in the setting of cardiac arrest.

\*\*\*\*\*