

**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0122]**

**JANUARY 2022**

**Sub. Code: 1236**

**(FEBRUARY 2021 & AUGUST 2021 EXAM SESSION)**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations from 2014-2015, 2015-2016 & 2018-2019)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

**Q.P. Code: 801236**

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What are all the causes for High Peak Inspiratory Pressure Alarm? List them in detail and write the method of trouble shooting each of the causes.
2. Explain in detail about Hospital Waste Management?
3. Describe Non- Invasive Ventilation. Write about BiPAP Ventilation.

**II. Write notes on:**

**(8 x 5 = 40)**

1. What are the steps for the Decontamination of the suction equipments?
2. Write notes on precautions during Urinary Catheterization.
3. Notes on Work of Breathing?
4. Write short on Oxygen Toxicity.
5. What are the methods of Deep Vein Thrombosis prophylaxis?
6. Write a note on Plasmapheresis?
7. Automated External Defibrillator?
8. Care and maintenance of ECG machine.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Indications of Lumbar Puncture?
2. What is Cardiac Arrest and its types?
3. Contra-Indications to Gastric Lavage.
4. Enumerate any two methods to clean Humidification?
5. Uses of ABG machine.
6. Indications of Syringe Pump.
7. List the sites of Central venous Cannulation.
8. Types of Respiratory Failure.
9. How will you confirm Endotracheal tube placement?
10. List out the Vasopressors used in critical care unit?

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0922]**

**SEPTEMBER 2022**

**Sub. Code: 1236**

**(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations from 2014-2015, 2015-2016 & 2018-2019)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

***Q.P. Code: 801236***

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What are the basic common modes of invasive mechanical ventilation? Write brief notes on each modes of ventilation.
2. Mention the techniques, indications and contra-indications of Gastric Lavage and write a note on Activated Charcoal.
3. Describe about Oxygen delivery systems and write a note on Non- Rebreathing mask.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Mention the various colour coding of Intra venous cannulas with their sizes and mention their infusion rates.
2. Glasgow Coma Scale.
3. Write short notes on Biphasic Defibrillator.
4. Write down the Six steps of Hand Washing.
5. Write are the indications for Emergency Dialysis.
6. Describe about Principle of Non- Invasive Blood Pressure Measurement.
7. Algorithm for Advance Cardiac life Support – Ventricular Tachycardia.
8. Write down the indication and steps of open Endotracheal tube suctioning.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Name two Anti-Coagulations that are commonly used in ABG Analysis.
2. Write down the names of five sites of the placement of chest electrode leads on the chest while you are connecting the ECG monitor.
3. Write a note on Thermometer.
4. Define Disinfection.
5. Write down the methods of Endotracheal Tube Confirmation.
6. Draw the Waveforms of ECG and its implications.
7. Write down the normal range of pH, PCO<sub>2</sub>, and PaO<sub>2</sub> in an arterial blood.
8. In which colour bags, would you dispose an infected gauze piece and food waste?
9. What is the mean arterial blood pressure for a patient with blood pressure of 90/60 mm Hg?
10. Write a note an Autoclave.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0423]**

**APRIL 2023**

**Sub. Code: 1236**

**B.Sc. CRITICAL CARE TECHNOLOGY  
THIRD YEAR (Regulations 2014-2015, 2015-2016 & 2018-2019 onwards)  
PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT  
Q.P. Code: 801236**

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:** **(3 x 10 = 30)**

1. Classify Arrhythmias. Discuss the functions of a defibrillator.
2. Discuss the essential ways a patient should be monitored on a ventilator.
3. Discuss the uses of a Bronchoscope in the ICU. What are the parts? Discuss how it is best maintained after use.

**II. Write notes on:** **(8 x 5 = 40)**

1. PEEP.
2. Pressure Control Ventilation - Advantages.
3. Nutrition assessment of ICU patients.
4. ABG use in ICU.
5. Draw a normal ECG and label waves, segments and intervals.
6. Pulse oximeter - usefulness in ICU.
7. Difficult intubation preparation.
8. Lung protective ventilation.

**III. Short answers on:** **(10 x 3 = 30)**

1. List essential monitors for a patient with circulatory shock.
2. Problems with pulse oximeter measurement.
3. Causes of low tidal volume alarm.
4. Causes of high-pressure alarm.
5. Humidification of circuits.
6. Non Invasive Ventilation - Advantages.
7. Steps in extubation.
8. List sites for central line placement.
9. Monitors used in head injury.
10. Parameters of Fluid responsiveness.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 1123]**

**NOVEMBER 2023**

**Sub. Code: 1236**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations 2014-2015, 2015-2016 & 2018-2019 onwards)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

**Q.P. Code: 801236**

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on: (3 x 10 = 30)**

1. Functional Nutritional assessment for a patient with Cardiovascular Problems.
2. What are the types of Hemodynamic monitoring used in your ICU? What are the advantages and disadvantages of an arterial line? How is an arterial line maintained?
3. What are all the causes for High Peak Inspiratory Pressure Alarm? List them in detail and write the method of trouble shooting each of the causes.

**II. Write notes on: (8 x 5 = 40)**

1. List out the abnormal ECG waves with images.
2. Defibrillators.
3. Guillain Barre Syndrome.
4. Lung volumes and capacities.
5. What are the measurements possible with Pulmonary artery catheter?
6. Plasmapheresis.
7. Bronchoscopy: indications, contraindications and maintenance.
8. Draw flow time graph of Pressure control vs Pressure support mode.

**III. Short answers on: (10 x 3 = 30)**

1. GCS score.
2. Infusion pumps.
3. Types of facemasks for Non Invasive Ventilation.
4. Protocolized weaning.
5. Importance of neuromuscular assessment in weaning and extubation.
6. Uses of ECHO in ICU.
7. Importance of Pain relief in Upper Abdominal Surgery.
8. Indications of Syringe Pump.
9. How will you confirm Endotracheal Tube placement?
10. Enumerate any two methods to clean Humidifiers.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0424]**

**APRIL 2024**

**Sub. Code: 1236**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations 2014-2015, 2015-2016 & 2018-2019 onwards)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

***Q.P. Code: 801236***

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What are the basic common modes of invasive mechanical ventilation? Write brief notes on each modes of ventilation.
2. What is Fluid status and Fluid responsiveness in ICU patients?
3. What is Cardiac index? Discuss the methods of measuring Cardiac output in the ICU?

**II. Write notes on:**

**(8 x 5 = 40)**

1. How will you monitor brain stem functions?
2. List out the common abnormal ECG interpretation in ICU with images.
3. What are the measurements possible with Pulmonary Artery Catheter?
4. Draw flow time graph of Pressure control vs Volume control mode.
5. Uses of ultrasound in ICU.
6. Work of breathing.
7. PICCO.
8. Clinical features of Malnutrition in adults.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Compliance.
2. How will you confirm Endotracheal tube placement?
3. Types of Pacing.
4. Ventilatory settings for a patient in septic shock.
5. What is Lumbar Puncture?
6. List out the Emergency drugs used in Critical Care Unit?
7. Uses of infusion pumps.
8. What is Basal Metabolic Rate (BMR)? Mention two conditions when BMR is increased?
9. What is Synchronization in Defibrillator?
10. Sedation score used in ICU.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0125]**

**JANUARY 2025**

**Sub. Code: 1236**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations 2014-2015, 2015-2016 & 2018-2019 onwards)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

***Q.P. Code: 801236***

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. What is the difference between Defibrillation and Cardioversion? Draw the sequence for Adult Basic Life Support.
2. What is meant by Sedation? What are the ways in which Sedation is given in ICU? Discuss the importance of monitoring sedation in ICU.
3. What is Airway Resistance? What are the methods of Reducing Airway Resistance?

**II. Write notes on:**

**(8 x 5 = 40)**

1. Various methods of Oxygen administration.
2. Thermodilution principle for measuring Cardiac output.
3. Bronchoscopy.
4. Precautions during Urinary Catheterization.
5. Skin integrity – assessment and care.
6. Post resuscitation care.
7. How would you assist in the drainage of a Pleural effusion?
8. Pulse Oximeter and its uses.

**III. Short answers on:**

**(10 x 3 = 30)**

1. What are Inspiratory and Expiratory pressures?
2. Types of Echocardiogram.
3. Advantages and disadvantages of PA catheters.
4. Define PFT.
5. Importance of Pain relief in upper abdominal surgery.
6. How to maintain arterial line in patients admitted to ICU?
7. Indications for Intra-aortic Balloon Pump.
8. List the sites of Central venous Cannulation.
9. Systemic Inflammatory Response Syndrome.
10. Troubleshooting.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[AHS 0425]**

**APRIL 2025**

**Sub. Code: 1236**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations 2014-2015, 2015-2016 & 2018-2019 onwards)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

***Q.P. Code: 801236***

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Describe the functional Nutritional assessment in detail.
2. Explain the care, maintenance and trouble shooting of ECG machine.
3. Discuss the monitoring techniques of muscle strength, work of breathing and maximum inspiratory pressures in detail.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Positive End Expiratory Pressure (PEEP).
2. Principles and methods of monitoring brain stem function.
3. Compliance and Resistance of the Respiratory system.
4. Metabolic assessment.
5. Approach to high pressure alarm in ventilator patient.
6. Principles and methods of monitoring tissue perfusion.
7. Care and maintenance of Defibrillator.
8. Temporary pacemaker.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Specify the uses of HME (Heat & Moist Exchanger) filters.
2. Mention any three major problems of infusion pumps.
3. Specify the functions of Cardiac output monitor.
4. Name any three tools for scoring sedation.
5. Define Analgesic scoring.
6. Define PICCO.
7. What are the static parameters of Preload?
8. Any three steps of troubleshooting Syringe pump.
9. Name the parameters that can be monitored in bedside PFT.
10. List any three maintenance techniques of pulmonary artery catheters.

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**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY**

**[AHS 1125]**

**NOVEMBER 2025**

**Sub. Code: 1236**

**B.Sc. CRITICAL CARE TECHNOLOGY**

**THIRD YEAR (Regulations 2014-2015, 2015-2016 & 2018-2019 onwards)**

**PAPER I – ICU MONITORING – II + MAINTENANCE OF EQUIPMENT**

***Q.P. Code: 801236***

**Time: Three Hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(3 x 10 = 30)**

1. Enumerate the etiology, diagnosis and management of the Congestive Cardiac Failure.
2. What is Compliance? Draw a pressure volume curve depicting normal and abnormal compliance. What is dynamic and static compliance?
3. What is Cardiac Index? What are the methods of Measuring Cardiac Output in the ICU?

**II. Write notes on:**

**(8 x 5 = 40)**

1. List the sites of Central Venous Cannulation.
2. Uses of ABG machine.
3. How will you confirm Endotracheal Tube placement?
4. Importance of Cough reflex and Gag reflex in ICU.
5. Capillary Refill Time.
6. Pulse Oximeter and its uses.
7. Draw Flow Time Graphic Showing Air trapping.
8. Bronchoscopy - indications, contraindications and maintenance.

**III. Short answers on:**

**(10 x 3 = 30)**

1. Importance of Neuromuscular Assessment of Weaning and Extubation.
2. Importance of Pain relief in Upper abdominal Surgery.
3. Enumerate any two methods to clean Humidifiers.
4. Types of Pacing.
5. Uses of Syringe pump.
6. Contra-indications to Gastric Lavage.
7. Sedation score that you use in ICU.
8. Work of Breathing.
9. GCS score.
10. What are the methods of Deep Vein Thrombosis Prophylaxis?

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