

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

[AHS 0321]

MARCH 2021

Sub. Code: 1248

(AUGUST 2020 EXAM SESSION)

B.Sc. CRITICAL CARE TECHNOLOGY

SECOND YEAR (From 2018-2019 onwards)

PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING

Q.P. Code : 801248

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. List the indications for Intubation. How to assess difficult Airway? Describe the procedure for Rapid Sequence Intubation.
2. Pulse oximetry - Principles, advantages and pitfalls in monitoring.
3. Describe the Four Arrest Rhythms and the cause of sudden cardiac arrest in ICU.

II. Write notes on:

(8 x 5 = 40)

1. Management of Hypoxia on Ventilated patient.
2. Multiparameter Monitor.
3. 12 Leads ECG – positions.
4. Describe in detail about Patient ventilator Dyssynchrony.
5. Post Resuscitation Care.
6. Importance of monitoring lung volume in ICU patients.
7. Factors that affect oxygen consumption.
8. Alveolar Gas equation.

III. Short answers on:

(10 x 3 = 30)

1. Prevention of Bed sore.
2. List out the things to check before using Defibrillator.
3. Acquired Cross infections in ICU.
4. Draw CVP trace and label.
5. Three causes of Upper Respiratory Bleeding.
6. List pitfalls of NIBP monitoring.
7. Mention 3 causes of drowsiness in ICU patients.
8. Complications during Haemodialysis.
9. Dead space.
10. Classify Medical Instruments.

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

[AHS 0222]

**FEBRUARY 2022
(AUGUST 2021 EXAM SESSION)**

Sub. Code: 1248

**B.Sc. CRITICAL CARE TECHNOLOGY
SECOND YEAR (From 2018-2019 onwards)
PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING
Q.P. Code : 801248**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. How do you evaluate and monitor a patient with acute loss of conscious in ICU?
2. Capnography monitoring- Principles, advantages and pitfalls in monitoring.
3. Describe the monitoring techniques used to assess the Neurological status, Renal and Liver functions of a patient in ICU.

II. Write notes on:

(8 x 5 = 40)

1. Evaluation of Acute chest pain.
2. Indications for CPAP ventilation.
3. Criteria for extubation.
4. How to recognize septic shock in ICU?
5. Neuro-protective strategies.
6. Prophylaxis in deep vein thrombosis.
7. Endotracheal Intubation.
8. CVP wave form.

III. Short answers on:

(10 x 3 = 30)

1. Ryles tube.
2. What is Lung Contusion?
3. List directly measured variables in an ABG.
4. List 3 factors that cause damping of arterial trace and their management steps.
5. Draw End Tidal CO₂ trace in Obstructive Airway disease.
6. Three causes of respiratory acidosis.
7. Draw Pressure Vs time scale for Volume control ventilation and label Peak and plateau pressures.
8. List common reasons for self-extubation.
9. PaO₂/ FiO₂ ratio.
10. Apnoea Alarm.

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

[AHS 0922]

SEPTEMBER 2022

Sub. Code: 1248

(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

B.Sc. CRITICAL CARE TECHNOLOGY
SECOND YEAR (Regulation from 2018-2019)
PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING
Q.P. Code : 801248

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. What are indications for active cooling of a patient in ICU? List some side effects of hypothermia.
2. Describe the various types and uses of medical equipments in ICU.
3. Describe the following:
 - a) Invasive Arterial Blood Pressure.
 - b) CVP Monitoring.
 - c) Zeroing, Calibrating, Trouble shooting of Pressure Transducer.

II. Write notes on:

(8 x 5 = 40)

1. Glasgow Coma Scale.
2. Inductance and transformers.
3. Arterial Blood gas parameters.
4. Zeroing the transducer.
5. Monitoring renal function in ICU.
6. List 3 causes of shock in ICU.
7. Monitoring CVP: advantages and disadvantages.
8. Intercostal drainage.

III. Short answers on:

(10 x 3 = 30)

1. Kirchhoff's Law – Electrical Circuit.
2. What is Pleural effusion?
3. Tracheostomy care.
4. Airway protection in unconscious patient.
5. Draw ECG changes with Myocardial Ischemia.
6. List disadvantages of Non Invasive Blood Pressure monitoring.
7. Complications of arterial line.
8. Parts of Laryngoscope.
9. List three causes of low blood pressure in the ICU.
10. What is normal Oxygen consumption (in ml/minute)? List the factors affecting Oxygen consumption.

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

[AHS 0423]

APRIL 2023

Sub. Code: 1248

B.Sc. CRITICAL CARE TECHNOLOGY
SECOND YEAR (Regulation 2018-2019 onwards)
PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING
Q.P. Code: 801248

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Hemothorax and describe in detail about the Clinical Features, Diagnosis And Critical Care Management.
2. Describe the Aetiology, Diagnosis and Management of Acute Pancreatitis.
3. Explain the Guidelines of Advanced Life Support (ALS) algorithm.

II. Write notes on:

(8 x 5 = 40)

1. Components of flow sheet in Neuro ICU.
2. Myasthenia Gravis.
3. Lead II ECG –Draw and Label.
4. Defibrillator.
5. Septic shock.
6. Residual Volume.
7. Non-Invasive Ventilation.
8. Acute Metabolic Alkalosis.

III. Short answers on:

(10 x 3 = 30)

1. Functional Residual Capacity.
2. HME Filters.
3. Nosocomial Infections in ICU.
4. Tetany.
5. Incentive Spirometry.
6. Intraosseous access.
7. Electrolyte imbalance in ICU patients.
8. Complications during Haemodialysis.
9. Anatomical Dead space.
10. Oxygen concentrators.

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

[AHS 1123]

NOVEMBER 2023

Sub. Code: 1248

B.Sc. CRITICAL CARE TECHNOLOGY
SECOND YEAR (Regulation 2018-2019 onwards)
PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING
Q.P. Code: 801248

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Tension Pneumothorax and describe in detail about clinical features, diagnosis, and critical care management.
2. Define Stroke. Discuss in detail about management of Ischaemic stroke.
3. Define Shock. What are the types of Shock? Explain in detail about pathophysiology and management of Hypovolemic Shock.

II. Write notes on:

(8 x 5 = 40)

1. CPAP.
2. Burn out syndrome.
3. Nebuliser.
4. ABG Monitoring.
5. Consumption coagulopathy.
6. Autologous blood transfusion.
7. Parts of a Laryngoscope.
8. Venturi effect.

III. Short answers on:

(10 x 3 = 30)

1. Deep Vein Thrombosis.
2. Precautions to be taken before endotracheal intubation.
3. Oropharyngeal Airway.
4. Hypokalemia.
5. Tidal volume.
6. Three causes for Bradycardia.
7. Pulse oximeter.
8. What is normal Minute Ventilation?
9. Universal precautions.
10. Postural drainage.

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

[AHS 0424]

APRIL 2024

Sub. Code: 1248

B.Sc. CRITICAL CARE TECHNOLOGY
SECOND YEAR (Regulation 2018-2019 onwards)
PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING
Q.P. Code: 801248

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

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

1. Describe the following:
 - a) Invasive Arterial Blood Pressure
 - b) CVP monitoring
 - c) Zeroing, Calibrating, Trouble shooting of Pressure transducers.
2. Discuss about the Pathophysiology and Management of Pulmonary embolism.
3. Discuss about the Management of Organophosphorus poisoning including the Ventilatory settings.

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

1. Positive End-Expiratory Pressure (PEEP).
2. Low Flow Oxygen Delivery Devices.
3. Work of Breathing.
4. Induced Hypothermia.
5. Partial Rebreather Bag.
6. Assessment of Endotracheal Cuff Pressure.
7. Management of Acute Severe Asthma.
8. Golden Hour.

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

1. Emergency Management of Anaphylactic Reaction.
2. List the sites of placement of Arterial Catheter.
3. Beck's Triad.
4. Draw the wave form of normal Electrocardiogram (ECG).
5. Functional Residual Capacity.
6. Anion Gap.
7. Causes of Delirium in ICU patients.
8. HME filters.
9. APACHE Score.
10. Criteria for Brain Death.

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

[AHS 1125]

NOVEMBER 2025

Sub. Code: 1248

B.Sc. CRITICAL CARE TECHNOLOGY
SECOND YEAR (Regulation 2018-2019 onwards)
PAPER III – ICU MONITORING I (BASIC) & BIOMEDICAL ENGINEERING
Q.P. Code: 801248

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Tension Pneumothorax and describe in detail about clinical features, diagnosis and critical care management.
2. Describe the aetiology, diagnosis and management of the Acute Fulminant Hepatitis.
3. Describe the physical set up of an ideal Medical ICU.

II. Write notes on:

(8 x 5 = 40)

1. Thrombolytic therapy.
2. Myasthenic syndrome.
3. Holter monitoring.
4. Management of Hypoglycemia.
5. Endotoxic shock.
6. Flow volume loop.
7. Opioid use in ICU.
8. Acute management of GI bleed.

III. Short answers on:

(10 x 3 = 30)

1. Crystalloids.
2. Shivering in ICU patients.
3. Oxygen cascade.
4. Tetanus.
5. Increased Intracranial pressure.
6. Citrate toxicity.
7. Acidosis in ICU patients.
8. Complications during Mechanical ventilation.
9. Kirchhoff's Law – Electrical Circuit.
10. Suction apparatus.
