BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Sc.(OTT)-2021/B.Sc.(OTT)-2022
Course Name – Advance Anesthetic Techniques
Course Code - BOTTS503
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Select which phase of the cardiac cycle do the semilunar valves open, allowing blood to be ejected from the ventricles?
   a) Isovolumetric Contraction b) Isovolumetric Relaxation
   c) Ventricular Ejection d) Ventricular Filling

(ii) Select Which neurotransmitter is responsible for increasing cardiac contractility through sympathetic stimulation?
   a) Norepinephrine b) Acetylcholine
   c) Serotonin d) Dopamine

(iii) Select the primary purpose of a 12-lead ECG.
   a) To assess chamber enlargement b) To diagnose conduction abnormalities
   c) To provide a complete view of the heart's electrical activity d) To detect right ventricular infarction

(iv) Select the normal duration of the QRS complex in a standard ECG.
   a) Less than 0.06 seconds b) Between 0.12 and 0.20 seconds
   c) Greater than 0.30 seconds d) Exactly 1 second

(v) Report the primary objective of monitoring and assessment during mechanical ventilation.
   a) Maximize tidal volume b) Identify complications and adjust settings
   c) Increase inspiratory pressure d) Minimize patient discomfort

(vi) Write the primary goal of oxygen therapy.
   a) To administer low-flow oxygen b) To monitor oxygen saturation
   c) To improve oxygenation d) To provide humidification

(vii) Select the primary purpose of a one-way valve in the non-rebreather mask.

a) To deliver a lower oxygen concentration
b) To allow exhaled air to escape
c) To provide positive pressure
d) To prevent the patient from inhaling exhaled air

(viii) Write that how does proper humidification contribute to enhanced gas exchange.

a) By reducing mucus plugging
b) By promoting airway obstruction
c) By increasing thermal discomfort
d) By impairing cilia function

(ix) Choose the way that electrolytes maintain the electrical excitability of cells.

a) By enhancing blood circulation
b) By regulating hormone levels
c) By conducting electrical impulses
d) By promoting tissue repair

(x) Choose the primary symptom of hypomagnesemia.

a) Abdominal pain
b) Muscle weakness
c) Seizures
d) Cardiac arrhythmias

(xi) Choose the clinical manifestation of hyperkalemia that poses a life-threatening risk.

a) Muscle weakness
b) Tetany
c) Respiratory depression
d) Cardiac arrhythmias

(xii) Choose the metabolic factor that can influence acid-base balance during anesthesia.

a) Blood pressure regulation
b) Alterations in glucose utilization
c) Hyponatremia
d) Respiratory acidosis

(xiii) Write the acid-base parameter that reflects the metabolic component of balance.

a) pH
b) $PaCO_2$
c) Bicarbonate (HCO_3^-)
d) Base Excess (BE)

(xiv) Choose the method that provides direct and accurate information about a patient's acid-base status.

a) Electrolyte analysis
b) Capnography
c) Base Excess (BE) calculation
d) Arterial Blood Gas (ABG) analysis

(xv) Identify which type of heart block involves a complete blockage of electrical impulses between the atria and ventricles.

a) First-degree heart block
b) Mobitz Type I heart block
c) Mobitz Type II heart block
d) Third-degree heart block

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Describe ventricular diastole phase of cardiac cycle. (3)
3. Write a short note on PR interval and it's significance. (3)
4. Explain the primary focus of oxygen therapy in palliative care. (3)
5. Discover the definition of electrolytes, and why are they important in the body? (3)
6. Analyze the relationship between Positive End-Expiratory Pressure (PEEP) and lung mechanics during IPPV, and explain how PEEP levels can be optimized for improved oxygenation. (3)

OR

Analyze how changes in intrathoracic pressure during IPPV affect cardiac output and provide strategies for managing hemodynamic stability in such situations. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe different componants of the conduction system of the heart. (5)
8. Describe different waves of normal ECG and how they originate. (5)

9. Compare and contrast the advantages and disadvantages of high-flow nasal oxygen therapy versus non-rebreather masks in terms of their effectiveness in delivering oxygen to patients with acute respiratory distress. (5)
10. Analyze the significance of frequent reassessment of acid-base parameters during prolonged anesthesia. (5)
11. Analyze the impact of inadequate humidification on the respiratory system. How does it affect the mucociliary function, airway obstruction, and the risk of infection? (5)
12. Evaluate the role of oxygen therapy in postoperative care, particularly for patients undergoing thoracic or upper abdominal surgeries. (5)

OR

Analyze the factors that contribute to the development of hypoxemia in patients and explain why hypoxemia is a critical consideration in oxygen therapy. (5)

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