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BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Sc.(CCT)-2022/B.Sc.(CCT)-2023

Course Name – Basics of Critical Care Technology

Course Code - BCCTC303

(Semester III)

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 the potential complication of using a bag-mask device for ventilation.
 - a) Hyperventilation
 - b) Gastric insufflation
 - c) Decreased tidal volume
 - d) Bradypnea
- (ii) Identify the recommended compression-to-ventilation ratio during CPR for adult patients.
 - a) fifteen: two
 - b) ten:three
 - c) Thirty: two
 - d) thirty: one
- (iii) Select the purpose of the Heimlich maneuver.
 - a) To perform chest compressions during CPR
 - b) To assist with bag-mask ventilation
 - c) To relieve choking by forcing air out of the lungs
 - d) To clear mucus from the airway
- (iv) Identify the correct statement about the Mallampati classification is correct.
 - a) It assesses the patient's level of consciousness.
 - b) It evaluates the risk of aspiration during intubation.
 - c) It predicts the ease of direct laryngoscopy and intubation.
 - d) It determines the size of the endotracheal tube to be used.
- (v) Select the potential complication of tracheostomy tube insertion.
 - a) Bradypnea
 - b) Aspiration pneumonia
 - c) Hyperinflation of the lungs
 - d) Epistaxis
- (vi) Select which of the following conditions is an indication for oxygen therapy.
 - a) Mild hypoxemia with stable vital signs
 - b) Preventive measure in healthy individuals
 - c) Treatment of anxiety
 - d) Oxygen saturation >95%
- (vii) Identify is the purpose of a humidifier in oxygen therapy.
 - a) To increase FiO₂
 - b) To provide supplemental oxygen
 - c) To prevent drying of the respiratory mucosa
 - d) To increase oxygen pressure

- (viii) Indicate when should you monitor a patient's oxygen saturation (SpO₂) level during oxygen therapy.
- | | |
|--|--|
| a) Every minute | b) Every 2 hours |
| c) Only when the patient complains of discomfort | d) As needed, depending on the patient's condition |
- (ix) Infer the term "tidal volume" in mechanical ventilation, refers to.
- | | |
|---|---|
| a) The volume of gas in the patient's lungs at end-expiration | b) The volume of gas delivered in each breath |
| c) The volume of gas in the ventilator tubing | d) The volume of gas exhaled in one breath |
- (x) Select the term for the process of transitioning a patient from mechanical ventilation to spontaneous breathing.
- | | |
|---------------------------|----------------------------|
| a) Ventilation cessation | b) Ventilation maintenance |
| c) Ventilation initiation | d) Ventilation weaning |
- (xi) Identify the appropriate size of an endotracheal tube for a pediatric patient.
- | | |
|----------|--------------|
| a) 2-3ID | b) 4-5ID |
| c) 6-7ID | d) 7.5-8.5ID |
- (xii) Select the most common mode of positive pressure ventilation used in emergency situations:
- | | |
|--|--------------------------------------|
| a) Synchronized Intermittent Mandatory Ventilation | b) Assist-Control Ventilation |
| c) Continuous Positive Airway Pressure | d) Bi-level Positive Airway Pressure |
- (xiii) Identify the medical device used to clip onto a patient's finger for pulse oximetry measurements called.
- | | |
|-------------------|----------------------|
| a) Pulse oximeter | b) Sphygmomanometer |
| c) Stethoscope | d) Electrocardiogram |
- (xiv) Identify does the term "plethysmograph" refer to in the context of pulse oximetry.
- | | |
|---|--|
| a) The graph of heart rate variability | b) The waveform of the pulsatile signal |
| c) The graph of oxygen saturation over time | d) The graph of blood pressure over time |
- (xv) Identify the acronym "PEEP" stand for in the context of extubation.
- | | |
|---|--|
| a) Postoperative Extubation Education Program | b) Pre-extubation Emergency Evaluation Plan |
| c) Positive End-Expiratory Pressure | d) Post-extubation Evaluation and Examination Protocol |

Group-B

(Short Answer Type Questions)

3 x 5=15

2. State common signs of airway obstruction. (3)
3. Describe the purpose of an oropharyngeal airway. (3)
4. Describe the purpose of a bronchoscopy. (3)
5. Classify the common delivery methods used in oxygen therapy. (3)
6. A patient's arterial blood gas (ABG) reveals a pH of 7.30, PaCO₂ of 50 mm Hg, and HCO₃⁻ of 24 mEq/L. Write the primary acid-base disturbance, and the probable underlying condition. (3)

OR

A patient's ABG shows a pH of 7.48, PaCO₂ of 32 mm Hg, and HCO₃⁻ of 23 mEq/L. Analyze the primary acid-base disturbance, and is there any compensation. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Discuss the factors that influence the frequency of airway suctioning in critically ill patients. (5)

8. Explain the appropriate technique for measuring the depth of endotracheal tube insertion during suctioning. (5)
9. Decide the primary goals of post-extubation care in mechanically ventilated patients. (5)
10. Tell in details about high flow oxygen therapy. (5)
11. Discuss the importance of maintaining proper oxygen flow rates and FiO2 levels to avoid complications. (5)
12. Write about Metabolic alkalosis along with treatment. (5)

OR

Write When should arterial blood gases (ABGs) be considered in assessing a patient's oxygenation and acid-base status. (5)
