



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(OTT)-2021/B.Sc.(OTT)-2022/B.Sc.(OTT)-2023

Course Name – Specialized Surgery and Anesthesia

Course Code - BOTTC601

(Semester VI)

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) Identify the disease characterized by narrowing and hardening of the arteries due to the buildup of plaque.
 - a) Atherosclerosis
 - b) Emphysema
 - c) Asthma
 - d) Hypertension
- (ii) Define the condition where the heart's electrical system malfunctions, leading to irregular heartbeat:
 - a) Arrhythmia
 - b) Congestive heart failure
 - c) Myocardial infarction
 - d) Aneurysm
- (iii) Identify the disease characterized by high blood pressure in the arteries, often asymptomatic but can lead to serious complications.
 - a) Atherosclerosis
 - b) Hypertension
 - c) Coronary artery disease
 - d) Heart failure
- (iv) Identify the primary function of a perfusion machine.
 - a) To regulate blood pressure
 - b) To maintain oxygenation of blood
 - c) To control body temperature
 - d) To administer anesthesia
- (v) Select the component responsible for oxygenating blood in a perfusion machine.
 - a) Cardiomy reservoir
 - b) Heat exchanger
 - c) Membrane oxygenator
 - d) Roller pump
- (vi) Identify a common complication associated with the use of an IABP.
 - a) Hypotension
 - b) Hyperkalemia
 - c) Bradycardia
 - d) Pulmonary embolism
- (vii) Identify the primary function of an Intra-aortic balloon pump (IABP).
 - a) To directly pump blood to the coronary arteries
 - b) To assist the heart by increasing preload
 - c) To decrease afterload and improve coronary perfusion
 - d) To regulate heart rate and rhythm

- (viii) Select the component primarily targeted by cell saver technique.
- | | |
|----------------------|--------------------|
| a) White blood cells | b) Red blood cells |
| c) Platelets | d) Plasma |
- (ix) Select the following techniques can help confirm proper placement of the radial artery catheter.
- | | |
|----------------------|---------------|
| a) Capnography | b) Ultrasound |
| c) Doppler flowmetry | d) X-ray |
- (x) Describe the following conditions may result in an elevated Central Venous Pressure (CVP).
- | | |
|------------------|----------------|
| a) Dehydration | b) Hemorrhage |
| c) Heart failure | d) Hypotension |
- (xi) Select the preferred position for mitral valve repair surgery.
- | | |
|------------------|---------------------------|
| a) Supine | b) Left lateral decubitus |
| c) Trendelenburg | d) Prone |
- (xii) Rewrite the following statements regarding 3D echocardiography is true
- | | |
|--|--|
| a) It provides only two-dimensional images of the heart. | b) It requires a specialized transducer |
| c) It cannot be performed using transesophageal echocardiography (TEE) | d) It has lower resolution compared to traditional echocardiography. |
- (xiii) Define the technique that commonly used to guide the placement of transesophageal echocardiography (TEE) probes.
- | | |
|---------------|------------|
| a) X-ray | b) MRI |
| c) Ultrasound | d) CT scan |
- (xiv) Choose the preferred method for postoperative pain management in neonates.
- | | |
|---------------------------------|-------------------------------------|
| a) Intravenous opioids | b) Oral analgesics |
| c) Patient-controlled analgesia | d) Non-pharmacological methods only |
- (xv) Discover the initial step in managing massive obstetrical hemorrhage:
- | | |
|--|--|
| a) Administration of uterotonic agents | b) Immediate blood transfusion |
| c) Surgical intervention | d) Assessment of the ABCs (Airway, Breathing, Circulation) |

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Describe the insertion technique of radial artery cannulation. (3)
3. Describe the electrocardiogram (ECG), and how does it work? (3)
4. Discuss the key considerations during neurosurgical procedures in the sitting position. (3)
5. Explain the surgical techniques are commonly employed in thyroid surgery. (3)
6. Evaluate the Apparatus and Techniques for Measuring Blood Pressure and Temperature. (3)

OR

- Evaluate the blood pressure measurement technique through the invasive blood pressure monitoring. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Write the comparison between wall suction and portable suction. (5)
8. Chart the main components of an intra-aortic balloon pump (IABP), and state the ratio that 1:2 in IABP setting. (5)
9. Summarize the non-invasive cardiac output machine, and its function. Draw the wave form of central venous pressure in detail. (5)
10. Evaluate the advantages of trans-sphenoidal hypophysectomy, and how do positioning techniques contribute to its success. (5)

11. Summarize the procedure of Transurethral Resection of the Prostate (TURP). (5)
12. Devise the some advanced features of modern cardiac monitors. (5)

OR

Explain the Components and Functions of an Echocardiography Machine and what are the ECG changes in Hyperkalemia and treatment of hyperkalemia. (5)

LIBRARY
Brainware University
Sarasat, Kolkata -700125