

Date : October 11, 2025
Total Marks : 100
Writing Time : 150 minutes (2.5 hours)
Reading Time : 15 Minutes (prior to writing time)

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO SECTIONS**, namely SECTION A & SECTION B:
 - **SECTION A** has two parts: Part I - 50 Multiple Choice Questions
 Part II - 3 Short Answer Questions

All questions under SECTION A are COMPULSORY.
 - **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions of your choice.
4. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
5. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the Section, Part and Question Number will NOT be evaluated and no marks will be awarded.
6. Begin each Section and Part in a fresh page of the Answer Booklet.
7. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
8. Use of any other paper including paper for rough work is not permitted.
9. **You must hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
10. This paper has **11 printed pages**, including this instruction page.

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SECTION A

PART I

Multiple Choice Questions [50 marks]

Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 51 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. To what pressure an endotracheal tube must be inflated to produce an adequate seal between the cuff and the wall of the trachea?
 - a) >40 mm Hg
 - b) 20-30 mm Hg
 - c) 10-15 mm Hg
 - d) <20 mm Hg
2. Which method should be used to open the airway in case of suspected C spine injury?
 - a) Jaw thrust
 - b) Back thrust
 - c) Abdominal thrust
 - d) Head tilt and chin lift
3. Which of the following is known as laughing gas?
 - a) B₂O
 - b) CO₂
 - c) NO₂
 - d) N₂O
4. What is the colour of nitrous oxide gas cylinder?
 - a) White
 - b) Black
 - c) Gray
 - d) Blue
5. An intravenous solution of 0.45% sodium chloride is _____.
 - a) hypotonic
 - b) isomeric
 - c) hypertonic
 - d) isotonic
6. "First, do no harm" is based on which ethical principle of health care?
 - a) Non-maleficance
 - b) Fidelity
 - c) Accountability
 - d) Beneficence

7. Most health-care-associated infections are transmitted to patients:
- a) From the hands of the health care workers.
 - b) It's from dirty washrooms.
 - c) From hospital food.
 - d) By talking to each other.
8. What should be the rate of compressions per minute while providing chest compressions in CPR?
- a) 100-120-per minute
 - b) 80-100 per minute
 - c) 60-80 per minute
 - d) 70-90 per minute
9. What is nephrectomy?
- a) Surgical removal of kidney
 - b) Surgical removal of necrotic tissues
 - c) The surgical repair of a nerve
 - d) Surgical removal of a nerve
10. _____ is the site of giving spinal anaesthesia.
- a) L1 – L2
 - b) L2 – L3
 - c) L5 – L6
 - d) L3 – L4
11. Anal and perianal procedures should be performed in which of the following positions?
- a) Lateral
 - b) Lithotomy
 - c) Dorsal recumbent
 - d) Trendelenburg
12. A small artery forceps used to hold small bleeders is called:
- a) Babcock's tissue forceps
 - b) Non-toothed dissecting forceps
 - c) Mosquito forceps
 - d) Allis tissue forceps
13. In hospital, the infectious non-sharp waste i.e. soiled bandage, dressings, soiled cotton are disposed of in which colored containers?
- a) red
 - b) black
 - c) blue
 - d) yellow

14. Which of the following is **NOT** true regarding pulse oximeter?
- a) It is used to measure O₂ saturation in blood.
 - b) It is used to measure the saturation of all the gases in the blood.
 - c) Sensor probe can be clipped on the finger, toe or earlobe.
 - d) It is a very sensitive monitor.
15. The process that kills live bacteria as well as spores is
- a) Disinfection
 - b) Sterilization
 - c) High level disinfection
 - d) None of the above
16. Grey colour injection port cap of I.V cannula represents which of the following?
- a) 14 G
 - b) 16 G
 - c) 18 G
 - d) 20 G
17. Which of the following will be a probable difficult intubation?



18. The oxygen flush valve delivers oxygen at what flow rate?
- a) 1-5 L/min
 - b) 10-15 L/min
 - c) 35-75 L/min
 - d) 100 L/min
19. The pressure in an oxygen cylinder is approximately:
- a) 500 psi
 - b) 1000 psi
 - c) 2000 psi
 - d) 5000 psi
20. The most common type of anesthesia breathing circuit used in adults is:
- a) Mapleson A
 - b) Mapleson D
 - c) Circle system
 - d) T-piece

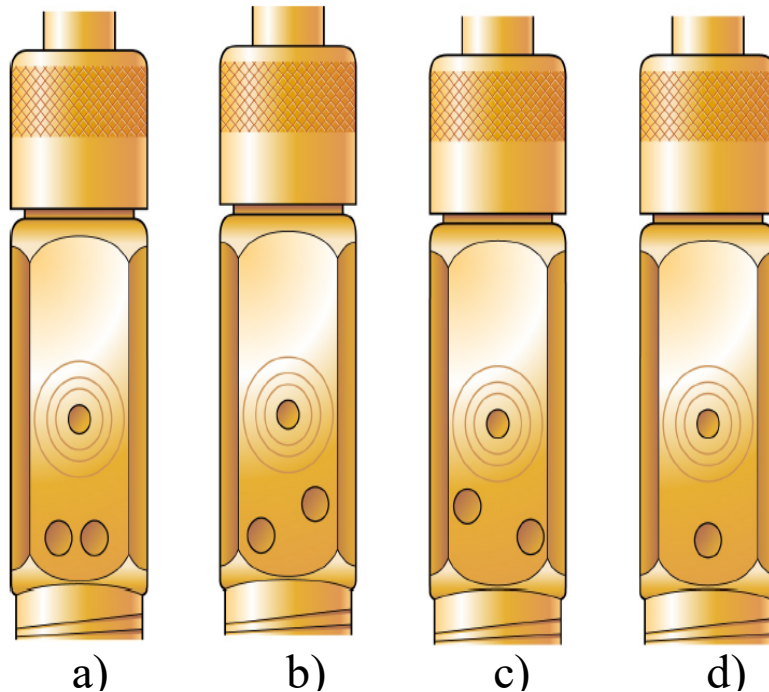
21. The minimum oxygen concentration required in an anesthesia gas mixture is:
- a) 10%
 - b) 21%
 - c) 25%
 - d) 30%
22. The pressure in the pipeline supply for medical gases is:
- a) 50 psi
 - b) 100 psi
 - c) 200 psi
 - d) 500 psi
23. Which of the following is a closed anesthesia breathing system?
- a) Mapleson A
 - b) Mapleson D
 - c) Circle system
 - d) T-piece
24. The most common type of endotracheal tube cuff is:
- a) Low-volume, high-pressure
 - b) High-volume, low-pressure
 - c) Foam cuff
 - d) Uncuffed
25. The size of an endotracheal tube is measured by its:
- a) Length in cm
 - b) Internal diameter in mm
 - c) External diameter in mm
 - d) French gauge
26. Which of the following is not a part of the anesthesia circuit?
- a) Breathing bag
 - b) CO₂ absorber
 - c) Vaporizer
 - d) Endotracheal tube
27. The fail-safe valve in an anesthesia machine is designed to:
- a) Stop nitrous oxide flow if oxygen pressure drops
 - b) Increase oxygen flow automatically
 - c) Measure end-tidal CO₂
 - d) Activate the ventilator

28. The most common cause of anesthesia machine malfunction is:
- a) Empty oxygen cylinder
 - b) Disconnected circuit
 - c) Faulty vaporizer
 - d) Power failure
29. The most common complication of high-pressure oxygen delivery is:
- a) Barotrauma
 - b) Hypoxia
 - c) Hypercapnia
 - d) Hypothermia
30. The Bourdon gauge is most accurate for measuring:
- a) Very low pressures (<5 cm H₂O)
 - b) High pressures (e.g., cylinder pressures)
 - c) Gas flow rates in laminar conditions
 - d) Negative pressures (e.g., suction)
31. In a rotameter, the float rises with increasing gas flow because of:
- a) Decreased viscosity of the gas
 - b) Increased pressure downstream
 - c) Increased velocity of gas lifting the float
 - d) Magnetic repulsion between the float and tube
32. The Hagen-Poiseuille equation applies to which type of gas flow?
- a) Turbulent flow
 - b) Laminar flow
 - c) Transitional flow
 - d) Supersonic flow
33. The performance of a plenum vaporizer is most affected by changes in:
- a) Atmospheric pressure
 - b) Fresh gas flow rate
 - c) Temperature of the operating room
 - d) Humidity of the carrier gas
34. Which type of vaporizer is designed to be agent-specific and cannot be used interchangeably between different volatile anesthetics?
- a) Copper kettle vaporizer
 - b) Tec vaporizer
 - c) Goldman vaporizer
 - d) Boyle's bottle

35. What is the purpose of the splitting ratio in a variable bypass vaporizer?
- a) To divide fresh gas flow between bypass and vaporizing chambers
 - b) To regulate the pressure of delivered anesthetic
 - c) To prevent backflow of anesthetic into the pipeline
 - d) To measure the temperature of the liquid agent
36. Which safety feature prevents the use of an incorrect anesthetic agent in the vaporizer?
- a) Color-coded bottles
 - b) Pin-index system
 - c) Agent-specific filling adapters
 - d) Pressure relief valve
37. Which of the following is a pressure-controlled ventilation (PCV) mode?
- a) Tidal volume is fixed, pressure varies
 - b) Inspiratory pressure is fixed, volume varies
 - c) Flow rate is constant throughout inspiration
 - d) Ventilation is triggered only by the patient
38. The bellows in an anesthesia ventilator ascend during which phase?
- a) Inspiration
 - b) Expiration
 - c) Both inspiration and expiration
 - d) PEEP application
39. PEEP (Positive End-Expiratory Pressure) is used to:
- a) Increase peak inspiratory pressure
 - b) Prevent alveolar collapse at end-expiration
 - c) Reduce tidal volume delivery
 - d) Enhance volatile anesthetic uptake
40. The ideal temperature range for an OT as per standards is:
- a) 18–22°C
 - b) 20–24°C
 - c) 22–26°C
 - d) 24–28°C
41. Critical temperature is important for cylinder storage because:
- a) It determines the pressure needed to liquefy a gas (e.g., CO₂ at 31°C)
 - b) It indicates flammability risk
 - c) It correlates with gas density
 - d) It predicts oxygen analyzer accuracy

42. If a pressure-reducing valve fails, the most likely consequence is:
- a) Gradual decrease in gas flow
 - b) Uncontrolled high-pressure gas delivery to the machine
 - c) Complete cessation of gas supply
 - d) Automatic switch to pipeline supply
43. The i-gel differs from other SADs because it:
- a) Requires an inflatable cuff
 - b) Has a built-in gastric drainage channel
 - c) Is made of thermoplastic elastomer (non-inflatable cuff)
 - d) Can only be used in pediatric patients
44. The first step in reprocessing reusable anesthetic equipment is:
- a) Sterilization
 - b) High-level disinfection
 - c) Thorough cleaning with detergent and water
 - d) Drying with compressed air
45. For heat-sensitive equipment (e.g., fiberoptic bronchoscopes), the preferred method of sterilization is:
- a) Dry heat
 - b) Ethylene oxide (ETO) gas
 - c) Boiling at 100°C
 - d) UV radiation
46. Which chemical is commonly used for high-level disinfection of anesthetic equipment?
- a) 70% ethanol
 - b) 2% glutaraldehyde
 - c) Household bleach
 - d) Povidone-iodine
47. The Spaulding classification defines laryngoscope handles as:
- a) Critical (must be sterile)
 - b) Semi-critical (require high-level disinfection)
 - c) Non-critical (cleaning alone suffices)
 - d) Single-use only

48. Below is the cylinder yoke of the e-cylinder of various gases. As per the pin index system diagram shown below, which one belongs to the oxygen cylinder



49. Which of the following circuits does not have valve

- a) Bains circuit
- b) Magill circuit
- c) Closed circuit
- d) Mapleson E

50. Oxygen was first synthesized by

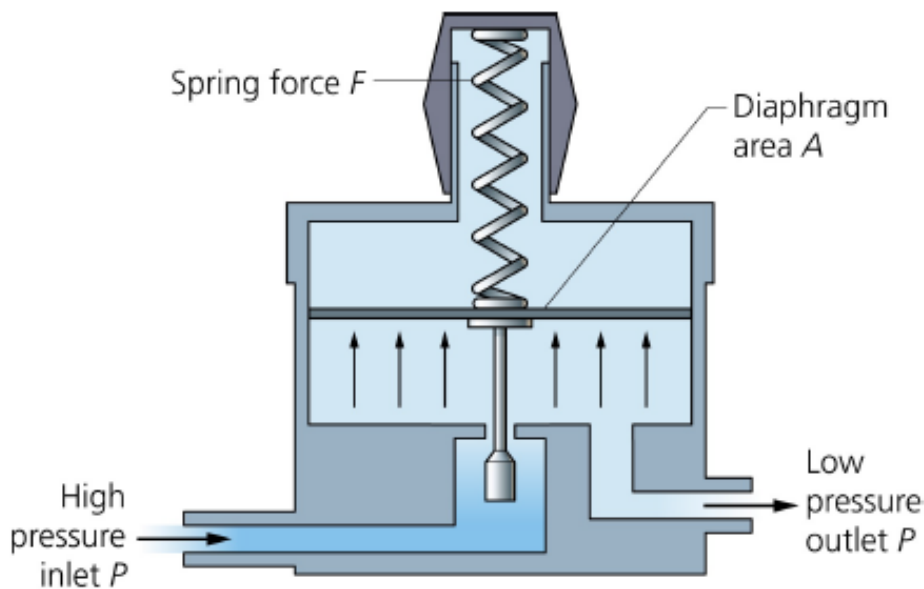
- a) WTG Morton
- b) Priestley
- c) Oliver Wendell homes
- d) Valerius Cordus

PART II

Short Answer Questions [30 marks]

This part has 3 Short Answer Questions. Answer ALL the questions. Mark for each sub-question is indicated in the brackets

1. Below is the diagram of an equipment used in the anesthesia work station.
 - a) Identify the equipment (1 mark)
 - b) Describe where it is used and its mechanism (4 mark)
 - c) What are the problems in its use and safety features (5 mark)



2. In regards to anesthesia breathing system:
 - a. Describe the Mapleson classification of breathing system and its uses (5 marks)
 - b. Describe the properties of ideal breathing system (3 marks)
 - c. List down the components of breathing system (2 marks)
3. Write a short note on the following 5 out of 6. Each carries 2 marks. (10 marks)
 - a. Sellicks manœuvre
 - b. IV fluids
 - c. Prevention of fire in OR
 - d. Supraglottic airway
 - e. Blood groups
 - f. Bispectral index (BIS)

SECTION B

Case Study [20 marks]

Choose either CASE I OR CASE II from this section. Each case study carries 20 marks. Mark for each sub-question is indicated in the brackets

CASE I

You are the senior OT Technologist on duty when a 45-year-old male patient, Mr. Hodo, is rushed into the emergency department with signs of septic shock and acute abdominal rigidity. A provisional diagnosis of a perforated viscus (likely duodenal ulcer) is made, and the surgical team declares an emergency exploratory laparotomy. The patient is being resuscitated and will be transferred to the OT within 30 minutes. Detail the comprehensive, systemic preparation you would undertake in the operation theatre for this emergency laparotomy, covering the following areas

- a) Preoperative Theatre readiness **(6 marks)**
- b) Infection control and sterilization **(4 marks)**
- c) Team coordination and communications **(4 marks)**
- d) Safety and contingency measures **(6 marks)**

CASE II

You are the senior OT Technologist in a busy general surgery theatre. During a laparoscopic cholecystectomy, a stack of sterile gauze (intended for the procedure) falls onto the visibly soiled floor near the scrub nurse's feet. The circulating nurse quickly picks it up, places it back on the sterile instrument table, and says, "It's fine, we'll use it if needed." The surgeon and anesthetist are focused on the patient and do not notice. The patient has a BMI of 35 and a history of diabetes.

- a. Identify THREE immediate risks to the patient arising from this situation. **(6 marks)**
- b. Describe FOUR specific actions you would take to mitigate these risks. **(6 marks)**
- c. Explain ONE long-term strategy to prevent similar incidents. **(4 marks)**
- d. Justify your decisions using evidence-based guidelines. **(4 marks)**

TASHI DELEK