

BASIC Exam Sample Questions

1. Which of the following nerves should **MOST** likely be blocked for an operation at the medial aspect of the lower leg?
 - A. Femoral
 - B. Common peroneal
 - C. Tibial

2. A patient is scheduled to undergo laparoscopic cholecystectomy. Thirty minutes after receiving premedication with morphine and midazolam, she suddenly develops right upper quadrant abdominal pain and nausea. Which of the following drugs is the **MOST** appropriate therapy for this patient's pain?
 - A. Flumazenil
 - B. Ketorolac
 - C. Naloxone

3. A 68-year-old woman with primary hyperparathyroidism is scheduled to undergo parathyroidectomy. Her serum calcium concentration is 15 mg/dL. IV administration of which of the following substances is the **MOST** appropriate initial management?
 - A. Magnesium sulfate
 - B. Normal saline
 - C. Methylprednisolone

4. Which of the following tests **MOST** reliably predicts the likelihood that a patient will develop malignant hyperthermia?
 - A. Calcium uptake assay in skeletal muscle biopsy
 - B. Genetic testing of the ryanodine receptor
 - C. Caffeine-halothane contracture test

5. O₂ 100 mL/min is bubbled through a vaporizer containing an anesthetic with a vapor pressure of 150 mmHg, and this mixture is added to a fresh gas flow of 5 L/min. Which of the following values **BEST** represents the delivered anesthetic concentration?
 - A. 0.25%
 - B. 0.5%
 - C. 2.5%

6. An adult patient with mild hypothermia is anesthetized with 1 MAC of isoflurane. Which of the following physiologic mechanisms is **MOST** effective for maintaining body temperature in this patient?
- A. Nonshivering thermogenesis
 - B. Shivering thermogenesis
 - C. Vasoconstriction
7. A 72-year-old man has just received midazolam for an endoscopic procedure of the upper gastrointestinal tract. Sedation is easily antagonized by flumazenil. Although the endoscopist asks to send the patient home in 1 hour, which of the following factors **BEST** explains why this patient should remain hospitalized for observation?
- A. Flumazenil has low affinity for benzodiazepine receptors
 - B. Flumazenil has moderate intrinsic agonist activity
 - C. Midazolam has a longer duration of action than flumazenil
8. Which of the following factors exerts the **GREATEST** effect on the extent of spread of local anesthetic following subarachnoid block with hyperbaric bupivacaine?
- A. Added epinephrine
 - B. Patient position
 - C. Total dose of drug
9. A 17-year-old boy develops pulmonary edema after resolution of postoperative laryngospasm. While breathing 100% O₂, SpO₂ is 80%. Which of the following strategies is the **MOST** appropriate management?
- A. Administration of albuterol
 - B. Administration of furosemide
 - C. Positive-pressure ventilation
10. A 61-year-old man receives a spinal anesthetic for transurethral resection of the prostate (TURP). Forty-five minutes after the start of the procedure, he suddenly develops nausea, diaphoresis, and sharp pain in the left shoulder. Which of the following etiologies is the **MOST** likely cause?
- A. Angina pectoris
 - B. Bladder perforation
 - C. Inadequate spinal sensory level
11. A 36-year-old woman is receiving general anesthesia for a diagnostic laparoscopy in the Trendelenburg position with CO₂ insufflation. During a 15-minute period after induction, her SpO₂ decreases from 99% to 90% and the partial pressure of ET-CO₂ increases from 38 to 43

mmHg. FiO_2 is 0.3; all ventilator settings have been constant. Which of the following etiologies is the **MOST** likely cause of the decrease in SpO_2 ?

- A. CO_2 embolus
- B. Compression of the vena cava
- C. Right mainstem endobronchial intubation

12. Two hours after a laparoscopic cholecystectomy, a 45-year-old woman with obesity is receiving IV PCA with morphine. Her SpO_2 is 90% on room air. Which of the following etiologies is the **MOST** likely cause of her hypoxemia?

- A. Absorption of CO_2 from the abdomen
- B. Hypoventilation
- C. Increased dead space

13. In a patient receiving pressure support ventilation, pressure support breaths are triggered by which of the following preset factors?

- A. A decrease in airway pressure
- B. An increase in airway pressure
- C. An increase in inspiratory flow rate

14. A healthy 42-year-old man has an increase in heart rate from 60 bpm to 120 bpm during induction of anesthesia. Which of the following factors is **MOST** likely to satisfy the increased metabolic demand of the myocardium?

- A. Decreased coronary artery resistance
- B. Increased coronary perfusion pressure
- C. Increased O_2 extraction by the myocardium

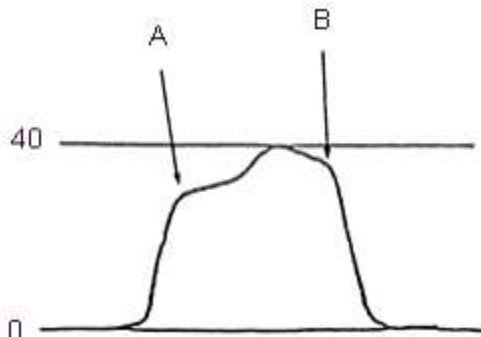
15. Which of the following laboratory values is **MOST** likely to confirm adequate synthetic hepatic function?

- A. Partial thromboplastin time
- B. Prothrombin time
- C. Serum alanine aminotransferase concentration

16. Which of the following strategies **BEST** prevents ventricular dysrhythmias in a patient undergoing extracorporeal shock wave lithotripsy?

- A. Beta-adrenergic blockade
- B. ECG synchronization
- C. Epidural blockade to T4

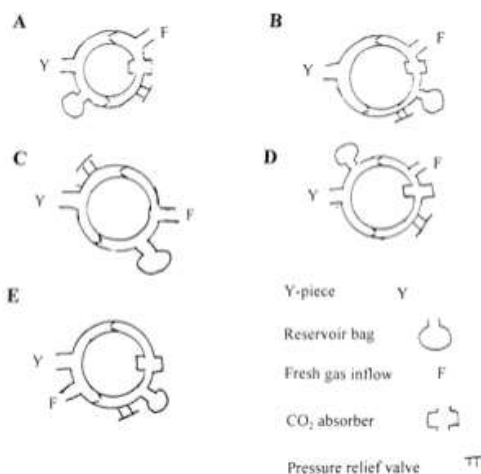
17. Compared with a semiclosed circle system, a Bain circuit exhibits which of the following characteristics?
- A. Less rebreathing of CO₂
 - B. A lower fresh gas flow requirement
 - C. More rapid change in inspired gas concentration



18. The capnograph waveform shown above was obtained from a patient undergoing hip surgery in the lateral position. Which of the following **BEST** explains the findings between point A and point B?
- A. Excessive tidal volume
 - B. Incompetent expiratory valve
 - C. Patient position
19. A 67-year-old man who developed a rash with past administration of penicillin is undergoing open reduction of a femur fracture. The surgeon asks if cefazolin can be administered to this patient. Which of the following actions is **MOST** appropriate for the anesthesiologist to perform?
- A. Administer cefazolin
 - B. Administer hydrocortisone, followed by cefazolin
 - C. Administer vancomycin instead of cefazolin
20. Which of the following factors **DECREASES** the MAC of isoflurane?
- A. Acute cocaine intoxication
 - B. Chronic ethanol abuse
 - C. Symptomatic hyponatremia
21. Which of the following outcomes **BEST** describes the primary toxic effect of bupivacaine on the cardiovascular system?
- A. Blockade of norepinephrine release
 - B. Coronary vasoconstriction

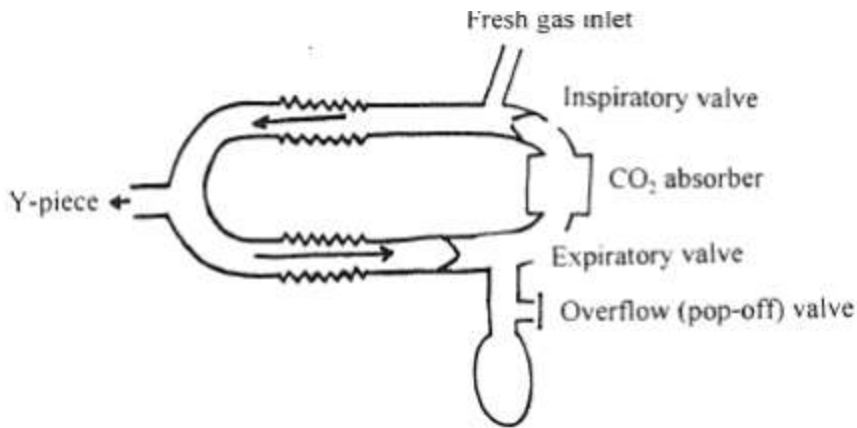
C. Delay of ventricular repolarization

22. Which of the following conditions **MOST** likely causes a rightward shift in the oxyhemoglobin dissociation curve?
- A. Carboxyhemoglobinemia
 - B. Decreased 2,3-diphosphoglycerate concentration
 - C. Hyperthermia
23. Which of the following findings is most likely to be **DECREASED** in a patient with clinical hypothyroidism?
- A. MAC
 - B. Myocardial contractility
 - C. Peripheral vascular tone
24. Which of the following anesthetic drugs is **MOST** likely to be associated with longer seizure duration when used for electroconvulsive therapy?
- A. Etomidate
 - B. Methohexital
 - C. Propofol
25. Which of the following drugs does **NOT** cause enhanced activity of the GABA receptor?
- A. Etomidate
 - B. Ketamine
 - C. Propofol



26. Which of the following systems will **MOST** likely prevent rebreathing of CO₂ regardless of the mode of ventilation?
- A. A

- B. B
- C. C



27. Which of the following components is **MISPLACED** in the circle system shown in the above illustration?
- A. Fresh gas inlet
 - B. CO₂ absorber
 - C. Expiratory valve
28. A new IV anesthetic is found to have a very large volume of distribution. This drug is **MOST** likely to have which of the following properties?
- A. Low lipid solubility
 - B. High rate of ionization
 - C. Low plasma protein binding
29. Which of the following drugs has the **LONGEST** duration of action in a patient with renal failure?
- A. Neostigmine
 - B. Rocuronium
 - C. Succinylcholine
30. Instillation of local anesthetic into the trachea via the cricothyroid membrane is **MOST** likely to block which of the following nerves?
- A. Hypoglossal
 - B. Internal branch of the superior laryngeal
 - C. Recurrent laryngeal
31. Gagging that occurs during awake intubation is **BEST** prevented by local anesthetic block of which of the following nerves?

- A. Superior laryngeal
- B. Glossopharyngeal
- C. Hypoglossal

32. Which of the following factors is the **MOST** likely explanation for the initial reduction in core temperature during general anesthesia?
- A. Ablation of thermoregulatory vasoconstriction
 - B. Evaporative heat loss in the respiratory tract
 - C. Redistribution of heat from the core to the periphery
33. A 65-kg, 70-year-old man in the PACU is breathing spontaneously at 20 breaths/minute through an ETT connected to a T-piece with a fresh gas flow of 5 L/min and an FiO₂ of 0.5. His tidal volume is 350 mL. Over 1 hour, his SpO₂ decreases from 98% to 84%, and then improves to 92% when FiO₂ is increased to 1.0. Which of the following etiologies is the **MOST** likely cause of his hypoxemia?
- A. Decreased FRC
 - B. Increased dead space ventilation
 - C. Room air admixture during inspiration
34. A 40-year-old man who is scheduled for repair of a tendon laceration of the left hand has complete anesthesia in the median, radial, and ulnar nerve distributions after supraclavicular block. Two hours of tourniquet inflation are required for completion of the procedure. The most appropriate **NEXT** step is an additional block of which of the following nerves?
- A. Axillary
 - B. Intercostobrachial
 - C. Musculocutaneous
35. Which of the following mechanisms is **PRIMARILY** responsible for emergence after a single dose of propofol?
- A. Redistribution
 - B. Metabolism
 - C. Excretion
36. An anesthesia machine is set to deliver O₂ 2 L/min, nitrous oxide 2 L/min, and sevoflurane. After 30 minutes of stable anesthesia, which of the following complications is the most likely cause of a **DECREASE** in the O₂ analyzer reading from 50% to 30%?
- A. A leak in the ventilator bellows
 - B. Accumulation of water on the O₂ sensor membrane
 - C. Presence of the O₂ analyzer in the expiratory limb

37. An induction dose of ketamine is **MOST** likely to have which of the following effects?
- A. Analgesia
 - B. Decreased cerebral metabolic rate
 - C. Preservation of laryngeal reflexes
38. As compared with an IV dose of morphine, which of the following factors is the most likely explanation for the **DECREASED** duration of action of an IV dose of fentanyl?
- A. Greater lipid solubility
 - B. Increased hepatic metabolism
 - C. Shorter elimination half-life
39. Which of the following definitions **BEST** describes what the standard error of the mean shows?
- A. The precision of the population mean
 - B. The range of the sample values
 - C. The deviation about the median of the study group
40. Pulse oximetry accurately reflects SaO₂ in which of the following situations?
- A. Administration of indocyanine green
 - B. Carboxyhemoglobinemia
 - C. 40% fetal hemoglobin concentration
41. A patient with a fasting blood glucose of 100 mg/dL is receiving a 4-hour general anesthetic for repair of tendon lacerations. Which of the following blood glucose concentrations is **MOST** likely expected on emergence?
- A. Marked hypoglycemia
 - B. Mild hyperglycemia
 - C. Mild hypoglycemia
42. Which of the following drugs **INCREASES** gastric pH while decreasing gastric volume?
- A. Glycopyrrolate
 - B. Metoclopramide
 - C. Ranitidine
43. Which of the following characteristics of nitrous oxide **MOST** likely explains why its alveolar and inspired concentrations equilibrate more rapidly than those of desflurane?
- A. Delivery at a higher inspired concentration

- B. Creation of a second gas effect
- C. Lower blood gas solubility

44. Which of the following goals is the **PRIMARY** purpose of denitrogenation prior to anesthetic induction?
- A. Improving matching of ventilation and perfusion
 - B. Increasing O₂ reserve in the FRC
 - C. Maximizing arterial O₂ content
45. A 32-year-old woman sustains an injury to the left recurrent laryngeal nerve during thyroidectomy. Which of the following postoperative findings is **MOST** likely in this patient?
- A. Adduction of the left vocal cord at rest
 - B. Aphonia
 - C. Aspiration caused by glottic incompetency
46. Which of the following values, in mmHg, is the expected mixed venous O₂ tension in a normal adult after breathing 100% O₂ for 10 minutes?
- A. 45
 - B. 95
 - C. 150
47. Which of the following drugs has the **SHORTEST** elimination half-life?
- A. Flumazenil
 - B. Lorazepam
 - C. Midazolam

BASIC Exam Answer Key							
Question #	Key	Question #	Key	Question #	Key	Question #	Key
1	A	13	A	25	B	37	A
2	C	14	A	26	B	38	A
3	B	15	B	27	A	39	A
4	C	16	B	28	C	40	C
5	B	17	C	29	A	41	B
6	C	18	C	30	C	42	C
7	C	19	A	31	B	43	A
8	B	20	C	32	C	44	B
9	C	21	C	33	A	45	A
10	B	22	C	34	B	46	A
11	C	23	B	35	A	47	A
12	B	24	A	36	B		