



<p>Tanta University Faculty of Medicine Anesthesia & SICU Dep. Date: 14 / 4 / 2016</p>	<p>Answer Keys: MD, 2nd Paper. No. of Questions: 10 Short Answer Questions (SAQ) Times allowed: 3 hours Total marks: 50 (5/ Question)</p>	
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1. Define refractory hypoxemia in ARDS and discuss the role of prone positioning in its management.
2. Discuss the different techniques/tools used for assessment of intravascular volume. Which one do you prefer? Justify your answer.
3. Surgical pain may change to chronic pain, when inappropriately managed. Define the chronic post-surgical pain. Enumerate its risk factors. Describe your role in reducing its incidence.
4. A 64-year-old man with past medical history of COPD, scheduled for a thoracoscopic resection of right middle lobe squamous cell carcinoma: What pulmonary function tests may help to assess postoperative pulmonary risk? Discuss the most important intraoperative concern during one lung anesthesia?
5. A 28-year-old man with a traumatic brain injury under mechanical ventilation, is assigned for heart beating organ donation after appropriate brain stem testing has confirmed brain death: Outline the potential pathophysiological changes after brain death in this sitting. Describe optimization for organ donation surgery.
6. Discuss the ESC/ESA and ACC/ AHA 2014 recommendations of perioperative use of beta-blockers in cardiac patients undergoing non-cardiac surgery.
7. A 62-year-old lady scheduled for vaginal hysterectomy. She has a history of recurrent episodes of ventricular tachycardia, which has been treated with an Automatic Implantable Cardioverter Defibrillator (AICD). What are the special concerns applicable to this lady in her operative sitting?
8. You are caring of a 52-year-old diabetic and hypertensive lady, who has given consent for laparoscopic gastric sleeve surgery. During the laparoscopy, the surgeon announces that he has identified undiagnosed uterine mass. An urgent gynecological consultation is done, and the gynecologist wants to proceed to hysterectomy, because the mass looks malignant. What is your opinion and who takes the responsibility for this decision? During the procedure, the patient shows signs of myocardial infarction (MI). An emergency consultation to cardiologist is done, who wants to proceed to angioplasty and coronary stent insertion prior to waking the patient. What is your opinion and who takes the responsibility for this decision?
9. Briefly outline a protocol of a study investigating the efficiency of a low tidal volume strategy compared to a conventional tidal volume strategy in high risk surgical patients.
10. Outline the cardio-respiratory physiological changes in infant and its implications during the perioperative setting?

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<p>Tanta University Faculty of Medicine Anesthesia & SICU Dep. Date: 10 / 4 / 2016</p>	<p>Exam: M.D (Paper 1) No. of Questions: 3 Times allowed: 3 hours Total marks: 50</p>	
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1. Anesthesia care should be of top quality, patient-centered and consistent with evidence based medicine.

- A. Outline the standards of the anesthesia care? (3 marks)
- B. What are the dimensions of the quality in the perioperative medicine? (2 marks)
- C. Discuss the international patient safety goals in the perioperative medicine? (4 marks)
- D. Rank the risk in anesthesia practice? (2 marks)
- E. Describe the best outcome of the anesthesia care? (2 marks)
- F. Set a strategy for risk management of Can Not Intubate Can Not Ventilate situation. (7 marks)

2. A 69-year-old, 80 kg man undergoing emergency exploration for a ruptured aortic aneurysm. The aneurysm is repaired after a prolonged surgery requiring 6 L of normal saline, 1 L of 5% human albumin, and 4 units of PRBCs. At the end of the surgery, he is transferred to the SICU and maintained on mechanical ventilation and norepinephrine 0.1 mic/kg/min intravenous infusion. An hour after admission, he is receiving 80 ml of normal saline per hour, her temperature is 36.8 C°, HR is 96 bpm, ABP is 115/60 mmHg, urine output is 80 ml, CVP is 11 cm H₂O, ventilator rate is 15 breaths/min, tidal volume is 420 ml and PEEP of 5 cm H₂O with a peak airway pressure of 24 cm H₂O, and FIO₂ 0.6; hemoglobin is 9.5 g/dl. Platelet count is 180,000/mm³, WBC 12,000/mm³, serum Na⁺ 134 mmol/L and K⁺ 4.5 mmol/L; blood urea is 40 mg/dl and creatinine is 1.5 mg/dl. Twelve hours after admission to the SICU, his ABP drops 80/40 mmHg, CVP 18 mmHg, hemoglobin is 9.3 g/dl, and urine output has decreased to 30 ml/h over the last 3 hours. The peak airway pressure is 55 cm H₂O. His pH is 7.32, PaO₂ is 54 mmHg despite increasing FIO₂ to 1.0 and PEEP to 15 mmHg, PaCO₂ is 46 mmHg, and HCO₃⁻ is 16 mmol/L. serum sodium is 140 mmol/L, potassium is 5 mmol/L, and chloride is 116 mmol/L.

- A. What is your differential diagnosis? (5 marks)

B. What is the most likely diagnosis (2 marks)? How you would confirm (1 marks)? How do you manage (2 marks)?

C. If pulmonary embolism is suspected, would you give thrombolytic agent? (2 marks)

D. How do you explain low pH? (1 marks)

E. Would you change the ventilator parameters? (3 mark)

F. when you would consider renal replacement therapy? (1 mark)


G. Set a plan for weaning from mechanical ventilation? (3 marks)

3. A 54-year-old man with diabetic end-stage renal disease on hemodialysis, who also has low back pain and lower extremity neuropathy. He has low back pain and severe pain in his feet and legs, with burning, sharp stabbing, and numbness. Average pain severity is 8/10. The pain is exacerbated by almost everything, and ameliorated by medications. Current medications include oxycodone extended-release 60 mg TID, and oxycodone immediate release 30 mg q4h. Previous medications that were not useful included gabapentin and pregabalin. Benzodiazepines have been helpful. In addition to diabetes, ESRD, and chronic pain, he has cirrhosis due to HCV, obstructive sleep apnea and is on CPAP. Physical examination shows normal sensation and strength in all extremities. Lumbar range of motion is normal, but the area is diffusely tender. Supine straight leg raise testing is negative bilaterally. No imaging studies of the lumbar spine or lower extremities are available. Recent pertinent laboratory studies show the following: WBC 4,000, HB 8 g/dl, Platelets 110,000, Sodium 139 mmol/L, Potassium 3.8 mmol/L, Glucose 101 mg/dl; BUN 24 mg/dl; Creatinine: 6.2 mg/dl; Calcium: 8.3 mg/dl.

A. What is your concern in management of this patient? (4 marks)

B. How you would manage? (6 marks)

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Tanta University	Exam: MD (1 st part)	
Faculty of Medicine	Pharmacology	
Anesthesia & SICU Dep.	No. of Questions: 4	
Date: 2 / 4 / 2016	Times allowed: 3 hours	
	Total marks: 45	

1. Patients with chronic liver insufficiency are at a high risk of perioperative morbidities.

- A. How are drugs metabolized by the liver? (3 marks)
- B. What drugs can cause damage to the liver? (2 marks)
- C. How does chronic liver insufficiency affect the drugs used in anesthesia? (5 marks)
- D. Explain risk of postoperative bleeding in patient with liver insufficiency. (2 marks)

2. A 54-year-old woman weights 120 kg presents with fracture neck of the left femur. Her past medical history is remarkable with IDDM for more than 20 years. The preoperative laboratory workup reveals; blood urea nitrogen of 40 mg/dl, serum creatinine 3.4 mg/dl, ALT more than double the normal value, and INR 1.4. Postoperatively, she developed a sudden onset of tachycardia and shortness of breath. A diagnosis of pulmonary embolism is made by helical CT scan. Enoxaparin (LMWH) 120 mg/12 subcutaneously is initiated. Regarding the prescribed dose of enoxaparin in her sitting, which one of the following statements is the most correct (2 marks), justify your answer (3 marks)? Explain the exclusion of the other items (4 marks).

- A. The dose is high, because dosing should be based on the ideal body weight.
- B. The dose is high, because of hepatic dysfunction.
- C. The dose is high, because of renal dysfunction.
- D. The dose is low, because of morbid obesity and increased volume of distribution.
- E. The dose is low, because of increased cytochrome P450 activity.

3. A 58-year-old lady undergoing resection of liver metastasizes. She has family history of malignant hyperthermia and surgical history of ileal conduit for cancer of urinary bladder. Currently she is treated by oral hypoglycemic drug. Anesthesia is provided with TIVA using propofol, fentanyl, and cis-


atracurium. After 8 hours of anesthesia, her ABGs values are as follow; pH 7.18 , PaCO₂ 30 mmHg , HCO₃⁻ 12 mmol/L, and BE – 14 mmol/L. Her serum electrolytes show Na⁺ 136 mmol/L, K⁺ 5 mmol/L, Cl⁻ 96, blood glucose is 13 mmol/L. Which one of the following conditions is the most likely cause of acidosis in her sitting (2 marks), justify your answer (3 marks)? Explain the exclusion of the other items (4 marks).

- A. Excessive use of normal saline for resuscitation.
- B. Diabetic ketoacidosis.
- C. Propofol infusion syndrome.
- D. Malignant hyperthermia.
- E. Renal tubular acidosis.

4. An ideal drug should satisfy the requirements of safety, effectiveness, efficacy, and efficiency, which can be tested by clinical trials. (15 marks)

- A. Define volume of distribution, clearance, and half-life. (3 marks)
- B. How can volume of distribution, clearance, and half-life be used to explain the difference in clinical effects of fentanyl and alfentanil? (3 marks)
- C. What factors determine the volume of distribution of a drug? (3 marks)
- D. Discuss the characteristic features of a safe muscle relaxant? (6 marks)

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<p>Tanta University Faculty of Medicine Anesthesia & SICU Dep. Date: 17 / 4 / 2016</p>	<p>Exam: MD, 3rd Paper No. of Questions: 35 SBAQs + 60 MCQs Times allowed: 3 hours Total marks: 100 (2/SBAQ & 0.5/MCQ)</p>	
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Single Best Answer Questions (SBAQs)

1. An 87-year-old, 60 kg man underwent a laparoscopic cholecystectomy for chronic cholecystitis. Early postoperatively, he had hypotension ranged between 85/45 mmHg and 75/40 mmHg, which treated by fluid resuscitation. Which one of the following findings is most consistent with inadequate resuscitation?

- A. CVP of 14 mmHg.
- B. Bilateral crepitation on chest auscultation.
- C. Urine / serum creatinine ratio of 45
- D. Fractional excretion of sodium of 1.3%
- E. Urine output of 30 ml in the last hour.

2. A 68-year-old man underwent an elective right hemi-colectomy for non-obstructive cancer colon discovered by colonoscopy. He developed fever (38.6 C°), on the evening of the first postoperative day. Which one of the following is the least likely cause of his fever?

- A. Urinary tract infection.
- B. Atelectasis.
- C. Intra-abdominal abscess.
- D. SIRS.
- E. Phelebitis.

3. A 76-year-old lady on chronic steroids for rheumatoid arthritis and insulin for IDDM. She underwent an emergency colostomy for perforated diverticulitis with fecal peritonitis. She was transferred to the SICU, on mechanical ventilation and a combination of broad spectrum antibiotics. On the evening of the first postoperative day, she developed fever and confusion. Her HR was 118 bpm and ABP was 75/55 mmHg, which remained low despite of fluid resuscitation and vasopressor use. Her blood glucose was 45 mmHg. Which one of the following conditions is the most likely cause of her sitting?

- A. Hypovolemia.

B. Sepsis.

C. Adrenal insufficiency.

D. Diabetic ketoacidosis.

E. Acute myocardial infarction.

4. A 69-year-old lady was admitted to ICU for suspicious of urinary tract sepsis. Her initial HR was 116 bpm, SpO₂ was 98%, and ABP was 75/50 mmHg. Blood samples for urine, blood, and sputum cultures were taken before initiation of intravenous vancomycin. Her HR was improved to 82 bpm and ABP was improved to 115/75 mmHg after resuscitation with 2 L of normal saline. The hemodynamics remained stable. On the 4th day all cultures showed no growth. Which of the following is the most appropriate next step in her management?

A. Continue vancomycin for further 3 days.

B. Continue vancomycin for further 7 days.

C. Discontinue vancomycin.

D. Switch to ciprofloxacin orally for further 4 days.

E. Repeat the cultures.

5. A 64-year-old woman developed fits followed by coma on the 3rd postoperative day of brain tumor and shunt. Her ventilator settings are assist/control mode, rate 15/min, FIO₂ 0.4, and PEEP 6 cm H₂O. Vital signs are temperature 36.8 C°, HR 108 bpm, and ABP 110/70 mmHg. Laboratory work up reveals sodium 115 mmol/L, potassium 4.2 mmol/L, chloride 86 mmol/L, bicarbonate 24 mmol/L, blood urea nitrogen 26 mg/dl, and creatinine 1.3 mg/dl. Examination reveals that she lost 7% of body weight. Urine output is 4 ml/kg/h, urine sodium is 160 mmol/L. Urine analysis is normal. Which one of the following diagnosis is most likely?

A. Adrenal insufficiency.

B. High output renal failure.

C. Syndrome of inappropriate anti-diuretic hormone.

D. Diabetes insipidus.

E. Cerebral salt wasting syndrome.

6. A 58-year-old lady underwent open gastric bypass surgery. Overnight, her urine was 80 ml over the last 3 hours. Examination revealed that the abdomen was more distended and tighter than before. Vital signs were, ABP 110/50 mmHg, HR 116 bpm, SpO₂ 98% on 6 L nasal cannula, and RR 18/min. The CVP values were ranging between 8 and 10 mmHg and the intra-abdominal pressure was 12 mmHg. Which one of the following intervention is the most appropriate for her sitting?

A. Lasix 40 mg intravenously.

B. Normal saline 5 ml/kg as a fluid challenge.

C. Renal dose of dopamine, 1-2 µg/kg/min.

D. Check arterial blood gases.

E. Emergency decompression.

7. A 32-year-old diabetic patient, presents for laparoscopic exploration for acute appendicitis. While he is in the holding area, arterial blood gases sample is obtained which reveals the following; PH 7.20, PaO₂ 90 mmHg, PaCO₂ 33 mmHg, HCO₃⁻ 12 mEq / L . Na⁺ 138 mEq / L, K⁺ 3.5 mEq / L, Cl⁻ 115 mEq / L, and glucose 14 mmol /L. Which one of the following is the most likely cause of acid- base disorder in this sitting?

A. Lactic acidosis.

B. Diabetic ketoacidosis.

C. Renal tubular acidosis.

D. Sepsis.

E. Drug overdose.

8. A 36-y-old man under mechanical ventilation is declared brain dead following severe head injury. Organ donation is planned. He has urine output > 300 ml / h, arterial blood pressure is 80 / 40 mmHg , serum sodium is 165 mEq / L , serum potassium is 3.5 mEq / L , blood urea nitrogen is 30 mg / dl , serum creatinine is 2 mg / dl , serum osmolarity is 320 mOsm / L , and urine osmolarity is 250 mOsm / L. Which of the following best explain this clinical condition?

A. Diabetes mellitus.

B. Hypoperfusion.

C. Central diabetes insipidus.

D. Cerebral salt wasting syndrome.

E. Syndrome of inappropriate antidiuretic hormone (SIADH).

9. A 50-year-old woman complains of a burning pain in her right hand, which is exacerbated by touch. She says that her hand sometimes turn blue. Which of the following nerve block best confirm diagnosis?

A. Bier block.

B. Axillary block.

C. Stellate ganglion block.

D. Interscalene block.

E. Lumbar sympathetic block.

10. A 64-year-old woman with history of congestive heart failure, presents with pain in the distribution of the trigeminal nerve, repeated vomiting, blurred vision, and dysesthesia in her feet. Currently, she is on digoxin and thiazide. The most appropriate step at this time would be:

- A. Neurological consultation to exclude multiple sclerosis.
- B. Check digoxin level.
- C. Initiate therapy with carbamazepine.
- D. Give fentanyl as narcotic and ondansetron as antiemetic.
- E. Trigeminal nerve block with xylocaine, as a diagnostic block.

11. A previously healthy adult male patient undergoing right forearm orthopedic surgery under an axillary block. Twelve minutes after injection of 30 ml marcaine 0.5%, he developed fits and V.F cardiac arrest. Which of the following measures is not indicated?

- A. Give single bolus dose of propofol to bind marcaine.
- B. Ventilate with 100% oxygen.
- C. Starts CPR at chest compression rate of 100 per minute.
- D. Give bolus dose of intralipid 20%, followed by infusion.
- E. Repeat the bolus dose of intralipid 20%, if V.F continues.

12. A 32-year-old woman presents to pain clinic with a 2-weeks history of progressive pain radiating from the lumbar spine down the back of the leg. Her physical examination is normal, apart from exacerbation of the pain with movement. Which of the following is the most appropriate for her sitting?

- A. No imaging is necessary; attempt conservative therapy.
- B. Obtain plain A/P film of the lumbar spine.
- C. Obtain plain A/P and lateral films of the lumbar spine.
- D. Perform MRI of the lumbar spine.
- E. Obtain CT of the lumbar spine.

13. A 47-year-old man with recent history of cerebral stroke, presents with fracture pelvis. Currently he is receiving dual antiplatelet therapy. His pre-anesthetic airway evaluation reveals that he has a Mallampatti score class IV and a neck circumference of 48 cm. Which of the following options would be the most appropriate for him?

- A. Inhalation induction followed by LMA.
- B. Inhalation induction followed by tracheal intubation.
- C. Awake intubation.
- D. Propofol followed by succinylcholine and tracheal intubation.
- E. Propofol followed by rocuronium and tracheal intubation.

14. A premature newborn delivered at 33 weeks of gestation undergoing a left – sided congenital diaphragmatic hernia (CDH). Awake tracheal intubation is conducted and anesthesia is maintained with oxygen, sevoflurane, fentanyl, and atracurium. Ten minutes later, SpO₂ falls to 65% and heart rate decreases to 50 bpm, and difficulty with ventilation. Which one of the following would be the most appropriate step to take at this time?

- A. Put a chest tube on the left side, then insert an oral gastric tube to decompress the stomach.
- B. Put a chest tube on the right side.
- C. Take the tracheal tube out and reintubate him.
- D. Ventilate with PEEP and give atropine.
- E. Ventilate with PEEP and give Lasix.

15. A 3-month-old infant is scheduled for emergency exploration for bowel obstruction. He has no urine for the last 4 hours. His laboratory values are as follows: Na⁺ 120 mEq/L, k⁺ 2.0 mEq/L, Cl⁻ 90 mEq / L, ca⁺⁺ 4.5 mEq / L, and glucose 5 mmol / L. The most appropriate fluid for resuscitation of him would be:

- a) 0.45% saline.
- b) 5% dextrose in water.
- c) 5% dextrose in water and potassium chloride 20 mEq / L.
- d) Normal saline with 20 mEq /L potassium chloride.
- e) Normal saline.

16. A 28-year-old parturient G1P0 with Eisenmenger syndrome asking for painless- labor. Which one of the following options is the most appropriate for her?

- A. Lumbar epidural analgesia with diluted marcaine < 0.1 % and fentanyl 2 mic / ml.
- B. Intravenous meperidine 1 mg / kg.
- C. Intramuscular meperidine 1.5 mg / kg.
- D. Lumbar epidural analgesia with diluted Marcaine < 0.1 % and fentanyl 2 mic/ml, and adrenaline 2 mic / ml.
- E. No intervention.

17. A 42-year-old man undergoing a left hepatectomy under isoflurane, fentanyl, and cis-atracurium general anesthesia. ABGs analysis show pH 7.38, PaO₂ 142 mmHg, PaCO₂ 38 mmHg, and SaO₂ 99%. At the same time PetCO₂ 25 mmHg. Which of the following is the most correct diagnosis explaining this sitting?

- A. Atelectasis.
- B. Main stem intubation.

C. Shunting through thebesian veins.

D. Hypovolemia.

E. Abolition of hypoxic pulmonary vasoconstriction by isoflurane.

18. A 48-year-old lady is undergoing laparoscopic gastric sleeve surgery under sevoflurane, cisatracurium, and remifentanyl in oxygen. At the end of the procedure, the wound is closed. Which of the following is the most expected scenario upon emergence?

A. Chest wall stiffness.

B. Delayed emergence from remifentanyl.

C. Effective analgesia for at least 30-60 minutes.

D. Immediate pain.

E. Respiratory depression in the PACU.

19. A 72-year-old man with documented aortic stenosis (valve area 1 cm²) is undergoing laparoscopic cholecystectomy. During the procedure, he becomes hypotensive (blood pressure 70/50 mmHg) while the heart rate remains unchanged at 82 bpm despite of lowering of intra-abdominal pressure by the surgeon. Which of the following will be the best course of action?

A. Administer ephedrine 3-6 mg increments.

B. Administer dopamine 10-15 µg/kg/min.

C. Administer phenylephrine 20-40 µg as bolus dose followed by infusion 0.5-1.0 µg/kg/min

D. Administer dobutamine 3-10 µg/kg/min.

E. Administer epinephrine 0.05-0.1 µg/kg/min.

20. A 60-year-old lady with history of congestive heart failure is scheduled for total knee replacement. Pre-induction assessment revealed that her SpO₂ is 85% on room air. Chest auscultation reveals crepitation throughout both lung fields with the patient in semi-sitting position. Which one of the following would be the most appropriate plan in her sitting?

A. Insert arterial line, and proceed with spinal anesthesia using heavy Marcaine.

B. Cancel the surgery for further evaluation.

C. Insert arterial line, proceed with sevoflurane general anesthesia and TEE monitoring.

D. Insert arterial line, proceed with isoflurane general anesthesia and CVP monitoring.

E. Give furosemide and dobutamine, then insert arterial line and CVP line and proceed with narcotic – based anesthesia.

21. A 24-year-old patient known to have sickle cell anemia, with history of a number of hospitalizations for sickle cell crisis. He presents for revision distal digit amputation of his left hand. He wants a rapid discharge from the hospital. Which of the following is the least option for his sitting?

- A. TIVA, with tracheal intubation.
- B. TIVA, with LMA.
- C. Bier block.
- D. Desflurane anesthesia, with tracheal intubation.
- E. Desflurane anesthesia, with LMA.

22. A 73-year-old patient presents with signs and symptoms of a leaking cerebral aneurysm. His preoperative ECG shows T-wave inversion, and a prolonged QT interval. Which of the following would have the priority before anesthesia?

- A. Delay surgery until myocardial infarction is ruled out.
- B. Begin infusion of nitroglycerine.
- C. Begin esmolol.
- D. Insert a pulmonary artery catheter.
- E. Check serum electrolytes.

23. A 27-year-old lady presents to the burn unit with smoke inhalation and 3rd degree burns on the abdomen, chest, and thighs 2 hours earlier. Which of the following is the best muscle relaxant of choice for intubation in her sitting?

- A. Succinylcholine.
- B. 2 mg vecuronium followed by succinylcholine.
- C. Cis-atracurium.
- D. Rocuronium.
- E. Atracurium.

24. A 32-year-old lady at 34 weeks gestation presents with premature uterine contractions. She is known to have pre-eclampsia, evident with edema of both lower limbs. Her ABP is 165/105 mmHg, HR is 94 bpm, temperature is 37.2 C°, RR is 20/min, and normal fetal heart tones. Treatment is initiated with intravenous magnesium sulfate, subcutaneous terbutaline, and intravenous fluids at a rate of 200 ml/hour. Four hours later, she complains of shortness of breath. Neck veins are not congested, SpO₂ is 90% on room air, RR becomes 28/min, and chest auscultation reveals bilateral basal crepitation with no abnormal heart sounds. Which one of the following is the most likely diagnosis?

- A. Pulmonary edema due to amniotic fluid embolism.

- B. Pulmonary edema secondary to fluid overload.
- C. Pulmonary edema complicating terbutaline (tocolytic agent).
- D. Pulmonary edema caused by infection.
- E. Pulmonary edema due to peripartum cardiomyopathy.

25. A 58-year-old man presents to SICU with motor vehicle accident. His vital signs show ABP of 80/50 mmHg, HR 118 bpm, and RR 18/min. Examination reveals an open fracture of the left femur, generalized abdominal rigidity. Chest radiograph reveals widened mediastinum. The patient is intubated because of deterioration of GCS score to 6. Which one of the following intervention is of highest priority?

- A. Continue resuscitation, because he cannot tolerate anesthesia and surgery.
- B. Emergency laparotomy.
- C. Control of ICP for traumatic brain injury prior to surgery.
- D. Emergency repair of open femur fracture.
- E. Emergency thoracotomy for widened mediastinum.

26. A 65-year-old man presents with traumatic head injury following motor vehicle accident. Initial evaluation reveals patent airway, maintained breathing, adequate circulation, and spontaneous eyes opening. He is confused and shows withdrawal to painful stimuli but does not follow commands. Brain non-contrast CT scan is negative. Eight hours later, his best eye opening is positive to painful stimuli, best verbal response is negative, he does not follow commands. Pupils are midrange, symmetric, and sluggish. He is intubated and mechanically ventilated. Regarding his condition, which one of the following statements is most correct?

- A. Use of dexamethasone will improve neurological outcome in his sitting.
- B. ICP monitoring is only indicated if repeated brain CT scan shows evidence of increased ICP.
- C. Brain CT scan with contrast is indicated to evaluate diffuse axonal injury.
- D. He should not receive anticonvulsants at this time.
- E. Radiographic manifestations of intra-parenchymal brain hemorrhage may be delayed up to 24 hours after the primary head injury.

27. A 32-year-old man requires general anesthesia for an emergency abdominal exploration. Thorough pre-oxygenation is undertaken and a rapid sequence induction of anesthesia is performed using 1.5 mg/kg of propofol, 2 mcg/kg fentanyl and 1.5 mg/kg of succinylcholine while a trained assistant applies cricoid pressure. After three attempts at tracheal intubation it has not been possible to intubate the trachea. Which one of the following options is the most appropriate action to be taken NEXT?

- A. Have one last (fourth) attempt at intubation.
- B. Check and optimize the patient's head and neck position.

- C. Request that the assistant perform backwards–upwards–rightwards pressure.
 - D. Recognize that this is a failed intubation and move to 'Plan B.'
 - E. Ventilate via a facemask or an LMA.
28. A 28-year-old patient presents for bilateral tubal ligation as a day case surgery. Which of the following is LEAST LIKELY to indicate that this patient is at risk of postoperative nausea and vomiting (PONV)?
- A. The operation is laparoscopic.
 - B. The patient is female.
 - C. The patient is a non-smoker.
 - D. The patient had a history of PONV.
 - E. The patient suffers from 'motion-sickness.'
29. In a structured peer review of a critically ill patient for postoperative morbidity, it is observed that the patient showed a mean arterial blood pressure < 70 mmHg, PaO₂ < 70 mmHg, core temperature < 36 C°, pH < 7.30, and BIS < 45% while the MAC < 0.7. Which of the following combination most likely to be associated with the postoperative mortality?
- A. A mean arterial blood pressure < 70 mmHg, PaO₂ < 70 mmHg, and core temperature < 36 C°.
 - B. A mean arterial blood pressure < 70 mmHg, pH < 7.30, and BIS < 45%.
 - C. A mean arterial blood pressure < 70 mmHg, BIS < 45%, and MAC < 0.7.
 - D. A mean arterial blood pressure < 70 mmHg, BIS < 45%, and core temperature < 36 C°.
 - E. A mean arterial blood pressure < 70 mmHg, pH < 7.30 and core temperature < 36 C°
30. A 63-year-old man, on epidural analgesia for two days post colon surgery. He wants to remove the epidural catheter. He received the last therapeutic dose of low molecular weight heparin (LMWH) 2 hours ago. Which of the following is the best option for his sitting?
- A. Remove the catheter immediately.
 - B. Wait for 24 h after the last dose of LMWH, then remove the catheter.
 - C. Wait for 6 h after the last dose of LMWH, then remove the catheter.
 - D. Wait for 12 h after the last dose of LMWH, then remove the catheter.
 - E. Give fresh frozen plasma 7 ml/kg, then remove the catheter.
31. A previously healthy 22-year-old girl is scheduled for laparoscopic pelvic surgery. She is non-smoker and has history of PONV. During her counselling she is concerned with postoperative nausea and vomiting (PONV). Which of the following options would be the most appropriate for her sitting?
- A. Avoid intraoperative opiates.

B. Avoid postoperative opiates.

C. Total intravenous anesthesia (TIVA).

D. PONV prophylaxis, TIVA, and avoid postoperative opiates.

E. PONV prophylaxis, inhalational anesthesia, and avoid postoperative opiates.

32. A 72-year-old patient is scheduled for total hip replacement surgery. He is hypertensive and diabetic. On examination, he is disoriented to time and place, his hand grip is weak and looks undernourished. His relatives are concerned with postoperative outcomes. Which of the following outcomes would be of highest risk for him?

a) Postoperative chest infection & urinary tract infection.

b) Postoperative nausea and vomiting (PONV) & postoperative pain.

c) Postoperative cognitive dysfunction (POCD) & postoperative renal failure.

d) Postoperative MI & PE.

e) Sepsis, multi-organ failure (MOF), and death.

33. A 43-year-old man who sustained a traumatic brain injury is undergoing a placement of a dural bolt. His hemoglobin is at 15 g/dl, with no evidence of bleeding. ABGs analysis before induction reveals a PaO₂ of 120 mmHg and SaO₂ of 100%. After induction, the PaO₂ rises to 150 mmHg with no change in arterial oxygen saturation. Which of the following values is the most correct to describe the change in oxygen content of the patient at this sitting?

A. It has increased by less than 1%.

B. It has increased by 5%.

C. It has increased by 10%.

D. It cannot be determined without pH.

E. It cannot be determined without PaCO₂.

34. A 42-year-old healthy man is undergoing intracranial surgery in the sitting position. Which of the following options would be the most appropriate in this sitting to achieve the best outcome?

A. Arterial blood pressure should be corrected to the sternal angle in the mid-axillary line, and mean arterial pressure (MAP) should be maintained between 60 – 70 mmHg.

B. Arterial blood pressure should be corrected to the sternal angle in the mid-axillary line, and MAP should be maintained between 80 and 90 mmHg.

C. Arterial blood pressure should be corrected to external auditory meatus, and MAP should be maintained between 60 – 70 mmHg.

D. Arterial blood pressure should be corrected to external auditory meatus, and MAP should be maintained between 80 – 90 mmHg .

E. Arterial blood pressure should be corrected to symphysis pubis, and MAP should be maintained between 60 – 70 mmHg .

35. A 70-y-old man with aortic stenosis (valve area 0.7 cm²), undergoing laparoscopic cholecystectomy. During insufflation of the peritoneum with CO₂, he becomes hypotensive (BP 65 / 50 mmHg) while the heart rate remain unchanged. The anesthetist asks the surgeon to decrease the pneumoperitoneum, but the BP remains low. Which of the following would be the best choice of action?

- a) Give an inotropic agent as dopamine.
- b) Give an inotropic agent as adrenaline.
- c) Give an alpha-agonist agent as phenylephrine.
- d) Give an inotrope as dobutamine.
- e) Give an inotrope as isoprenaline.

Multiple Choices Questions (MCQs)

1. Which one of the following statements is true?

- A. Pulmonary embolism is a shunt defect due to perfused less ventilated alveoli.
- B. Pulmonary embolism is a shunt defect due to ventilated less perfused alveoli.
- C. Pulmonary embolism is a dead space defect due to perfused less ventilated alveoli.
- D. Pulmonary embolism is a dead space defect due to ventilated less perfused alveoli.

2. The blood-brain barrier is highly permeable to all of the following, except:

- A. Sodium.
- B. Water.
- C. Carbon dioxide.
- D. Oxygen.

3. As regards the cardiovascular effects of isoflurane, which of the following is true?

- A. It slows the heart rate.
- B. It is associated with stable cardiac rhythm.

- C. It increases the stroke volume.
 - D. It sensitizes the heart to catecholamines.
4. Time out policy includes all of the following except:
- A. Proper patient identification.
 - B. Site marking should be done after induction of anesthesia.
 - C. Do the wright surgery on the wright patient by the wright surgeon.
 - D. Special prosthesis should be documented before handling of the first instrument.
5. Informed consent of anesthesia includes all of the following except:
- A. The patient should understand his medical condition.
 - B. The risk, benefits and potential complications of surgery should be explained to the patient .
 - C. Alternatives should be offered.
 - D. Reassurance.
6. Which one of the following is not affected by electro-surgery?
- A. Pulse oximeter.
 - B. Pacemaker.
 - C. Temperature probe.
 - D. ECG monitoring.
7. Laminar flow in a tube is proportional to the radius of the tube raised to which one of the following:
- A. First power.
 - B. Second power.
 - C. Fourth power.
 - D. Eighth power.
8. Which one of the following can be measured by a dry spirometer?
- A. Expiratory reserve volume.
 - B. Functional residual capacity.
 - C. Closing volume.

D. Total lung capacity.

9. Regarding critical temperature of a gas, which one of the following is true?

A. Is the temperature above which the gas cannot be ignited.

B. Is the temperature above which the gas cannot be liquified, whatever the applied pressure .

C. Is the temperature above which the pressure is critical.

D. Is the temperature at which the pressure is critical.

10. Regarding oxygen cylinders, which one of the following is true?

A. When full have a gauge pressure of approximately 137 bar.

B. Have a black body and black & white shoulders.

C. Have a filling ratio of 0.65 in a country like Egypt.

D. Have the pin index position 3 and 5.

11. Which one of the following formulae of mean arterial pressure is correct?

A. Diastolic blood pressure + $1/2$ (pulse pressure).

B. Diastolic blood pressure - $1/3$ (pulse pressure).

C. Diastolic blood pressure + $1/3$ (pulse pressure).

D. Systolic blood pressure + $1/3$ (pulse pressure).

12. In closed circuit anesthesia, the one parameter that must be met is the:

A. Minute volume.

B. Respiratory rate.

C. Tidal volume.

D. Oxygen consumption.

13. Electrocautery machine do not cause ventricular fibrillation because the current delivered by it, differs from the electric current supplied by wall electrical outlet by being:

A. Direct current instead of alternating current.

B. Low in voltage.

C. Lower in frequency.

D. Higher in frequency.

14. The statement that equal volumes of gases at the same temperature and pressure contain equal numbers of molecules is:

- A. Boyle law.
- B. Charles law.
- C. Avogadro hypothesis.
- D. Archimedes hypothesis.

15. Which one of the following is the function of the scavenging system?

- A. To retrieve anesthetic gases for reuse and cost savings.
- B. TO retrieve exhaled gases for warming and humidification of inhaled gases.
- C. To retrieve anesthetic gases and reduce operating room contamination.
- D. To retrieve exhaled gases to use as carriers and reduce total fresh gas flow.

16. The relationship between intra-alveolar pressure, surface tension and the radius of an alveolus is described by which one of the following:

- A. Graham law.
- B. Newton law.
- C. Laplace law.
- D. Bernoulli law.

17. Which of the following initial ventilator setting is appropriate for patient with asthma exacerbation?

- A. AC mode, rate 16, tidal volume 8 ml/kg.
- B. AC mode, rate 12, tidal volume 10 ml/kg.
- C. AC mode, rate 8, tidal volume 6 ml/kg.
- D. SIMV mode, rate 16, tidal volume 10 ml/kg.

18. Which of the following initial ventilator setting is appropriate for patient with sepsis induced ARDS?

- A. AC mode, rate 12/min, tidal volume 8 ml/kg.
- B. AC mode, rate 10/min, tidal volume 10 ml/kg.
- C. AC mode, rate 20/min, tidal volume 6 ml/kg.
- D. SIMV mode, rate 16/min, tidal volume 10 ml/kg.

19. As regards monitoring of depth of anesthesia by BIS, all of the following are true, except:
- A. A BIS value below 40 suggests deep anesthesia.
 - B. A BIS value of 90 suggests light anesthesia.
 - C. A BIS value between 45 and 55 is optimum for general anesthesia.
 - D. A BIS value of 100 means that the patient is completely awake.
20. Which site of the following is the least reliable for body temperature monitoring during anesthesia?
- A. Nasopharynx.
 - B. Tympanic membrane.
 - C. Skin.
 - D. lower third of the esophagus.
21. The most potent of inhalation anesthetics is:
- A. Sevoflurane.
 - B. Isoflurane.
 - C. Halothane.
 - D. Desflurane.
22. The cardiovascular effects of thiopental are:
- A. Decreased myocardial contractility and increased blood pressure.
 - B. Decreased myocardial contractility and decreased blood pressure.
 - C. Decreased myocardial contractility and increased stroke volume.
 - D. Decreased stroke volume and increased blood pressure.
23. Propofol as compared to thiopental:
- A. Has no effect on cerebral metabolic rate.
 - B. Does not cause excitatory motor activity.
 - C. Is less likely to provoke bronchospasm.
 - D. If administered in equipotent doses for induction of anesthesia it causes less reduction in systemic blood pressure.
24. Which of the following narcotics causes the greatest decrease in myocardial contractility when administered in high doses?

- A. Meperidine.
- B. Morphine.
- C. Fentanyl.
- D. Sufentanil.

25. The least likely side effect of dexmedetomidine in a healthy patient is:

- A. Respiratory arrest.
- B. Hypotension.
- C. Bradycardia.
- D. Sedation.

26. Clinical sign that the CO₂ absorbent is exhausted do not include:

- A. Signs of parasympathetic stimulation.
- B. Increased surgical bleeding.
- C. Color change of ethyl violet.
- D. Increased Pet CO₂.

27. The perioperative management of a patient with sickle cell anemia should avoid all of the following except:

- A. A low hematocrit.
- B. Hypothermia.
- C. Hypoxemia.
- D. Hypovolemia.

28. Coronary perfusion pressure (CPP) is increased as a result of:

- A. Increased diastolic blood pressure (DBP).
- B. Increased left ventricular end diastolic pressure (LVEDP).
- C. Systolic hypertension.
- D. Tachycardia.

29. A low pulse pressure means which one of the following:

- A. Mean arterial pressure is less than 50 mmHg.
- B. Diastolic blood pressure is less than 50 mmHg.
- C. The difference between systolic blood pressure and diastolic blood pressure is equal to systolic blood

pressure.

D. The difference between systolic blood pressure and diastolic pressure is less than half of systolic pressure.

30. Respecting proper management of patients with traumatic brain injury, all of the following therapeutic interventions should be maintained except:

A. $\text{PaO}_2 > 95$ mmHg.

B. Initiating maintenance of PaCO_2 between 25 and 30 mmHg within the first 24 hours.

C. Mean arterial pressure > 80 mmHg.

D. Head of bed elevation > 30 degrees.

31. Regarding resuscitation of trauma patients, which of the following statements is true?

A. Resuscitation with 2 L of isotonic solutions over 15 minutes will not permit estimation of the severity of hemorrhage.

B. Tamponade is the most common cause shock in patients with chest trauma.

C. The base deficit, blood lactate, and probably ScvO_2 are the most useful and practical markers of organ perfusion that can be used to monitor response to resuscitation.

D. Intra-osseous cannulation should not be used in children < 5 years.

32. A 12-y-old boy with no significant past medical and surgical history, scheduled for inguinal hernia repair. His mother states that his uncle died unexpectedly during surgery for broken leg. Which of the following should be included in your anesthetic plan?

A. Not be altered by this information.

B. Not include the use of succinylcholine or volatile anesthetics.

C. Difficult airway trolley should be available.

D. Resuscitation trolley should be available.

33. A 2-y-old boy undergoing squint surgery, his heart rate drops to 50 bpm. Which of the following is your first step in treating this sitting?

A. Do nothing.

B. Give i.v atropine.

C. Tell the surgeon to stop what he is doing.

D. Increase depth of anesthesia.

34. During pre-induction assessment of a 32-y-old parturient for emergency CS, her blood pressure is 70/40 mmHg with feeling of dizzy. Which of the following is your first response?

- A. Pressor injection.
- B. Left uterine displacement.
- C. Fluid administration.
- D. Oxygen by anesthesia machine mask.

35. Which of the following co-morbidities would warrant postponement of an urgent surgery?

- A. MI within the last 30 days.
- B. Chronic renal insufficiency.
- C. Chronic heart failure.
- D. Fast atrial fibrillation.

36. Regarding LMA, which of the following statements is true?

- A. Positive pressure ventilation is generally not useful.
- B. It cannot be used in lateral position.
- C. Tidal volume of up to 8 ml/kg and airway pressure below 20 cm H₂O can be used in positive pressure ventilation with LMA.
- D. The intra-cuff pressure should always be less than 20 cm H₂O.

37. Which of the following is not true, regarding blood glucose in critically ill patients?

- A. Hyperglycemia presents increased risk of postoperative infection.
- B. Hyperglycemia is expected with head injury and require no treatment because it is transient.
- C. Hyperglycemia is common in critically ill as a complication to parenteral nutrition and/or steroid therapy.
- D. Hyperglycemia presents a risk of mortality in diabetic patients present with AMI.

38. Which of the following cardiovascular changes associated with patients with cirrhosis?

- A. High cardiac output, high arterial blood pressure, and high systemic vascular resistance.
- B. High cardiac output, high arterial blood pressure, and low systemic vascular resistance.

- C. High cardiac output, low arterial blood pressure, and low systemic vascular resistance.
- D. Low cardiac output, low arterial blood pressure, and low systemic vascular resistance.
39. The WHO initiative 'safe surgery saves life' includes all of the following, except :
- A. Proper identification of the patient.
 - B. Pulse oximeter is functioning and connected to the patient.
 - C. Risk of difficult airway should be documented.
 - D. Temperature probe should be connected to the patient.
40. All of the following are causes of pulseless electrical activity except:
- A. Pulmonary embolism.
 - B. Ventricular fibrillation.
 - C. Hypovolemia.
 - D. Cardiac tamponade.
41. Which of the following is not a predictor of postoperative mortality in hypertensive patient undergoing major vascular surgery?
- A. Preoperative treatment with insulin.
 - B. Preoperative serum creatinine < 2 mg/dl.
 - C. History of ischemic heart disease.
 - D. History of peripheral vascular disease.
42. Which of the following mean the number needed to treat of a new analgesic is 4?
- A) From every 4 patients treated with the new analgesic, one patient shows effective pain relief.
 - B) From every 4 patients treated with the new analgesic, 1 patient shows no pain relief.
 - C) From every 10 patients treated with the new analgesic, 4 patients show effective pain relief.
 - D) From every 10 patients treated with the new analgesic, 4 patients show no pain relief.
43. Which of the following is the best approach for handling comparison of means between more than two groups or between several measurements in the same group?
- A. Chi-square test.
 - B. Paired t-test.
 - C. Analysis of difference (ANOVA).

D. Unpaired t –test.

44. Which of the following is the most sensitive early sign of malignant hyperthermia?

A. Progressive rising end-tidal CO₂ tension.

B. Fever.

C. Tachycardia.

D. Muscle rigidity.

45. According to WHO, which of the following is the 5th vital sign?

A. Pain.

B. Temperature.

C. Pulse rate.

D. Arterial blood pressure.

46. Regarding ARDS, all of the following are true except:

A. It can be triggered by extra-pulmonary cause.

B. The mortality rate is approximately 30%.

C. Static compliance is markedly reduced.

D. Once the patient is hemodynamically stable, negative fluid balance is not recommended.

47. Which of the following is the most common laboratory abnormalities in patients receiving total parenteral nutrition?

A. Hypoglycemia.

B. Hypertriglyceridemia.

C. Elevated liver transaminases.

D. Hypophosphatemia.

48. Regarding anesthetic management of cardiac tamponade, which of the following hemodynamic goals are optimum?

A. High filling pressure, slow heart rate, and high systemic vascular resistance.

B. High filling pressure, fast heart rate, and high systemic vascular resistance.

C. High filling pressure, fast heart rate, and low systemic vascular resistance.

- D. low filling pressure, fast heart rate, and high systemic vascular resistance.
49. Concerning decontamination of medical equipment, which of the following is a false?
- A. Semi-critical items are those in contact with mucous membrane.
 - B. Glutaraldehyde is a high level disinfection.
 - C. Re-usable laryngeal mask airways can be sterilized by Glutaraldehyde.
 - D. Sterilization is required for critical items.
50. Which of the following is the best one block for pain secondary to cancer pancreas?
- A. Intrathecal neurolysis.
 - B. Hypogastric plexus block.
 - C. Celiac plexus block.
 - D. Stellate ganglion block.
51. All of the following are side effects of intrathecal morphine except:
- A. Hypotension.
 - B. Nausea and vomiting.
 - C. Pruritus.
 - D. Respiratory depression.
52. Which of the following is consistent with definition of allodynia?
- A. Pain secondary to a primary lesion in the nervous system.
 - B. An increased response to a painful stimulus.
 - C. Pain provoked by non-painful stimulus.
 - D. A decreased response to a painful stimulus.
53. As regards sodium nitroprusside for treatment of intraoperative hypertension, which one of the following is true?
- A. It is venous dilator only.
 - B. Its use may produce bradycardia.
 - C. Its toxicity is associated with metabolic alkalosis.
 - D. Its toxicity is associated with metabolic acidosis.

54. Functional residual capacity (FRC) equals:

- A. Total lung capacity – maximum inspiratory volume.
- B. Maximum expiratory volume + residual volume.
- C. Tidal volume + maximum expiratory volume.
- D. Closing capacity.

55. The PaO₂ for a patient with SpO₂ of 95% is expected to be:

- A. 80 mmHg.
- B. 60 mmHg.
- C. 95 mmHg.
- D. 90 mmHg.

56. The range of pH of blood that compatible with life is:

- A. 7.44 – 7.36
- B. 7.30 – 7.60
- C. 7.10 – 7.70
- D. 6.80 – 7.80

57. Myocardial oxygen demand can be decreased by:

- A. Increased contractility.
- B. Increased heart rate.
- C. Decreased heart rate.
- D. Increased afterload.

58. Regarding the maximum effect of hyperventilation during surgical excision of brain tumor, which of the following PaCO₂ values are recommended?

- A. 34 to 32 mmHg.
- B. 20 to 25 mmHg.
- C. 25 to 30 mmHg.
- D. 25 to 20 mmHg.

59. Signs of air embolism include all of the following except:

A. Decreased end-tidal CO₂ tension.

B. Hypertension.

C. Heart murmur.

D. Dysrhythmias.

60. The first modality to be lost on the onset of spinal anesthesia is:

A. Autonomic activity.

B. Touch.

C. Temperature.

D. Motor power.

.....GOOD LUCK.