

## Sample questions ITA/Part I Paper A

1. **Inadequate tissue oxygenation may occur, in spite of a normal PaO<sub>2</sub>, in the presence of**
  - A. anaemia
  - B. a shift to the left of the oxyhemoglobin dissociation curve
  - C. low cardiac output
  - D. local vasoconstriction
  - E. metabolic alkalosis
  
2. **Which of the following statements are true?**
  - A. the carotid bodies are sensitive to arterial blood pressure
  - B. hypotension produces increased baroreceptor discharge
  - C. increased plasma renin activity stimulates aldosterone production
  - D. posture influences aldosterone production
  - E. antidiuretic hormone secretion is increased in systemic hypotension
  
3. **The elastic tissue within the arterial system**
  - A. allows transitory storage of the major part of the stroke volume during the ejection phase
  - B. contributes to the onward flow of blood during ventricular diastole
  - C. minimises the effects of intrathoracic pressure upon aortic pressure
  - D. contributes to conversion from intermittent to continuous blood flow
  - E. maintains coronary perfusion
  
4. **During sustained severe exercise the**
  - A. oxygen saturation of mixed venous blood remains above 70 per cent
  - B. minute volume of ventilation may reach 130 litres
  - C. pulmonary vascular resistance falls
  - D. cardiac output may reach 50 litres/min
  - E. core temperature may reach 40°C

5. **Ventricular  $dP/dt$  is increased by an increase in**
- A. after-load
  - B. pre-load
  - C. myocardial contractility
  - D. ionized calcium concentration
  - E. heart rate
6. **In the normal pulmonary vascular bed**
- A. the mean arterial pressure is half the mean aortic pressure
  - B. the vascular resistance is lower than the systemic vascular resistance
  - C. 50% of the total blood volume is present at rest
  - D. the wedge pressure equals the capillary pressure
  - E. hypoxia causes dilation of vessels
7. **Intra-pleural pressure is**
- A. subatmospheric
  - B. related to mid-oesophageal pressure
  - C. changing throughout the ventilatory cycle
  - D. equal throughout the pleural space
  - E. increased by coughing
8. **Closing capacity**
- A. normally exceeds residual volume
  - B. decreases in the supine position
  - C. is the sum of closing volume and residual volume
  - D. decreases with age
  - E. is normally less than functional residual capacity
9. **Intrapulmonary shunts increase**
- A. mixed venous oxygen tension
  - B. arterial oxygen saturation
  - C. when pulmonary blood flow is partially obstructed
  - D. in the presence of atelectasis
  - E. with severe fluid overload

10. **The symbol P50 refers to the**
- A. partial pressure of oxygen at 50 mmHg (6.7 kPa)
  - B. PaO<sub>2</sub> at which the oxygen content is 50 ml/100 ml blood
  - C. percentage saturation of hemoglobin at a PaO<sub>2</sub> of 50 mmHg (6.7kPa)
  - D. oxygen content of plasma at a PaO<sub>2</sub> of 50 mmHg (6.7kPa)
  - E. PO<sub>2</sub> at which the hemoglobin is 50% saturated
11. **Pituitary feedback mechanism regulates secretion of**
- A. ACTH
  - B. adrenaline
  - C. cortisol
  - D. insulin
  - E. thyroxine
12. **Cerebrospinal fluid**
- A. production in an adult is 150 ml/24 h
  - B. is mainly reabsorbed in the lateral ventricles
  - C. does not accurately reflect acute changes in base excess in arterial blood
  - D. is virtually free of glucose
  - E. specific gravity (relative density) is 1015-1020
13. **The transmitter substances in all the ganglia of the autonomic nervous system include**
- A. acetylcholine
  - B. noradrenaline
  - C. 5-hydroxytryptamine
  - D. butyrylcholine
  - E. dopamine
14. **Inulin**
- A. is totally removed from blood passing through the kidney
  - B. is not reabsorbed by the renal tubules
  - C. is secreted by renal tubular cells
  - D. is metabolised by renal tubular cells
  - E. has a concentration in glomerular filtrate which is the same as that in plasma

**15. Concerning water excretion**

- A. the ascending limb of the Loop of Henle is impermeable to water
- B. chloride reabsorption from the Loop of Henle occurs passively
- C. under conditions of maximum antidiuresis, 5% of water reabsorption occurs in the distal tubule
- D. the maximum medullary osmolality is 800 mosmols/L
- E. dehydration induces aldosterone production

**16. The anion gap**

- A. is normally 12mmol/L
- B. increases in lactic acidosis
- C. is decreased in aspirin poisoning
- D. decreases in diabetic ketoacidosis
- E. is increased in renal failure

**17. Concerning carbonic acid and bicarbonate in the blood**

- A. at pH 7.4, the ratio of bicarbonate to carbonic acid is 20 to 1
- B. the buffer system depends upon carbonic anhydrase
- C. the hydrogen ion formed by carbonic acid is buffered by reduced haemoglobin
- D. the Henderson-Hasselbalch equation describes the buffer equilibrium
- E. extracellular buffering of excess hydrogen ions occurs instantaneously

**18. Cytochrome P450**

- A. is an enzyme which regulates the speed of oxygen release from haemoglobin
- B. is present in sympathetic nerve endings
- C. participates in the metabolism of noradrenaline
- D. is a terminal oxidase important in biotransformation of drugs
- E. is a potent enzyme inducer

**19. In the movement of fluids and dissolved molecules**

- A. diffusion is proportional to the permeability of the membrane
- B. a non-diffusible anion will slow transfer of a diffusible cation
- C. the trans-membrane potential depends upon the presence of non-diffusible ions
- D. the osmotic pressure is necessary to prevent ionic migration
- E. filtration is hydrostatic pressure dependent

**20. The stomach**

- A. is responsible for the absorption of approximately 25% of the ingested protein
- B. secretes vitamin B12
- C. acidity depends upon the activity of carbonic anhydrase in its parietal cells
- D. decreases its motility when fat enters the intestine
- E. is capable of large changes in capacity with small changes in pressure

**21. Labetalol**

- A. can cause postural hypotension
- B. reduces heart rate
- C. has an elimination half-life of 24 hours
- D. is a more potent alpha than beta adrenoceptor blocker
- E. may cause bronchoconstriction

**22. Beta adrenoceptor stimulant drugs can cause**

- A. hyperglycaemia
- B. hypokalaemia
- C. increased gastrointestinal motility
- D. skeletal muscle tremor
- E. increased contractility of the pregnant uterus

**23. Reliable early signs of cyanide toxicity due to sodium nitroprusside infusion include**

- A. progressive metabolic acidosis
- B. abnormal electroencephalographic changes
- C. increased mixed venous oxygen tension
- D. constant response to low dose infusion of sodium nitroprusside
- E. a decrease in haemoglobin saturation

**24. Effects of atropine instillation in the normal eye include**

- A. paralysis of the sphincter pupillae muscle
- B. paralysis of the ciliary muscle
- C. increase in intra-ocular pressure
- D. enophthalmos
- E. photophobia

- 25. Intracranial blood volume is increased by**
- A. halothane
  - B. vecuronium
  - C. thiopentone
  - D. nitroglycerine
  - E. ketamine
- 26. Tinnitus may be caused by**
- A. codeine
  - B. aspirin
  - C. cocaine
  - D. lidocaine (lignocaine)
  - E. gentamycin
- 27. Cerebral oxygen consumption is significantly decreased by**
- A. propofol
  - B. thiopentone
  - C. nimodipine
  - D. nitrous oxide
  - E. fentanyl
- 28. Uptake of an inhalational anaesthetic from the alveoli to the blood is influenced by the**
- A. blood/gas partition coefficient of the agent
  - B. alveolar ventilation
  - C. cardiac output
  - D. ventilation/perfusion ratio in the lung
  - E. partial pressure gradient across the alveolar capillary membrane
- 29. Prolonged exposure to nitrous oxide**
- A. inactivates vitamin B12
  - B. interferes with methionine metabolism
  - C. interferes with folate metabolism
  - D. impairs desoxyribonucleic acid (DNA) synthesis
  - E. produces megaloblastic haemopoiesis

**30. Inhalational anaesthetic agents with a blood/gas partition coefficient of less than 2.6 include**

- A. sevoflurane
- B. isoflurane
- C. desflurane
- D. halothane
- E. diethyl ether

**31. Anaphylaxis to intravenous anaesthetics**

- A. is prevented by antihistamine premedication
- B. is characterised by profound hypotension
- C. only occurs with prior exposure
- D. is associated with elevated serum tryptase concentrations
- E. is dose related

**32. Ketamine**

- A. sensitises the myocardium to adrenaline
- B. is a butyrophenone derivative
- C. is poorly soluble in water
- D. causes bronchoconstriction
- E. has a marked chronotropic effect

**33. Concerning propofol**

- A. it has a high clearance rate in excess of liver blood flow
- B. extra-hepatic metabolism occurs to a significant extent
- C. significant reduction in the volume of distribution occurs in elderly patients
- D. it may induce burst suppression of EEG activity
- E. clearance is 870-2140 ml/min

**34. Local anaesthetic agents primarily biotransformed in the liver include**

- A. ropivacaine
- B. prilocaine
- C. lignocaine (lidocaine)
- D. procaine
- E. bupivacaine

**35. Toxic effects of amide local anaesthetics include**

- A. myocardial depression
- B. methaemoglobinemia
- C. central nervous system depression
- D. bronchospasm
- E. convulsions

**36. Concerning pharmacokinetics:**

- A. only non-ionised drugs will readily distribute into the lipid phase of membranes
- B. propofol has a high clearance
- C. for a given clearance, the elimination half life of a drug is directly proportional to the volume of distribution
- D. drugs with a low extraction ratio are affected by hepatic blood flow
- E. the clearance of lidocaine (lignocaine) approaches hepatic blood flow

**37. Recognised factors in the inactivation of mivacurium include**

- A. glomerular filtration
- B. protein binding
- C. hepatic biotransformation
- D. hydrolysis by plasma cholinesterase
- E. blood pH

**38. Morphine may provoke**

- A. nausea and vomiting
- B. bronchoconstriction
- C. increased output of urine
- D. constipation
- E. constriction of the pupils

**39. Platelet aggregation is reduced by**

- A. acetylsalicylic acid
- B. dipyridamole
- C. tranexamic acid
- D. ketorolac
- E. dextran

**40. Sodium cromoglycate is**

- A. a bronchodilator
- B. an antihistamine
- C. a stabiliser of the mast cell membrane
- D. a cardiac stimulant
- E. effective in acute asthma

**41. Concerning diffusion:**

- A. rate of diffusion is proportional to concentration gradient
- B. at cellular level, carbon dioxide equilibration takes place in less than 0.1s
- C. the diffusion rate of most volatile anaesthetics is similar to carbon dioxide
- D. carbon monoxide is used in the measurement of pulmonary diffusing capacity
- E. the rate of diffusion of a substance is directly proportional to its molecular size

**42. Surface tension**

- A. is greater in small than in large alveoli
- B. arises from the cohesive forces between the molecules of a liquid
- C. increases as lung volume decreases
- D. is decreased by surfactant
- E. of alveolar lining fluid is higher than that of water

**43. Successful countershock for ventricular fibrillation requires**

- A. energy levels of 200 to 360 joules
- B. ECG monitoring
- C. simultaneous depolarisation of all myocardial fibres
- D. synchronized DC countershock
- E. prior administration of adrenaline

**44. Concerning high frequency jet ventilation**

- A. minute volume ventilation is independent of the entrained gas
- B. an increase in I/E ratio increases the lung volume
- C. a decrease in driving pressure causes a decrease in PaCO<sub>2</sub>
- D. it is contraindicated in patients with broncho-pleural fistula
- E. CO<sub>2</sub> elimination is improved by increasing the frequency

45. **The reaction of carbon dioxide with soda lime includes the**
- A. formation of sodium carbonate
  - B. formation of calcium carbonate
  - C. release of heat
  - D. release of water
  - E. production of carbon monoxide
46. **Poiseuille's law states that flow rate is proportional to the**
- A. square of the radius of the tube
  - B. length of the tube
  - C. density of the fluid
  - D. viscosity of the fluid
  - E. pressure gradient
47. **Concerning the pneumotachograph:**
- A. it measures pressure change across a resistance
  - B. its accuracy does not require laminar gas flow
  - C. it is not suitable for accurate breath-by-breath measurement
  - D. its accuracy is affected by temperature change
  - E. changes in gas composition require recalibration
48. **Recognised methods of effectively reducing operating room concentrations of waste volatile anaesthetic gases include**
- A. the use of a condenser humidifier
  - B. the use of low flow anaesthesia
  - C. piping waste gases to floor level
  - D. passing waste gases through activated charcoal
  - B. passive ducting to the external atmosphere
49. **Concerning heat loss during anaesthesia:**
- A. conduction is the most important phenomenon
  - B. convection is decreased when the air adjacent to the body is warm
  - C. radiation is decreased by aluminium foil blankets
  - D. respiration equals 30% of the total heat loss
  - E. sweating is decreased when the relative humidity increases

- 50. The humidity of the atmosphere is measured by**
- A. determining the dew point
  - B. a wet and dry bulb thermometer
  - C. cooling a known volume of air
  - D. absorption of water by a hair
  - E. measuring barometric pressure
- 51. Techniques for measuring blood flow include**
- A. ultrasound
  - B. dye dilution
  - C. plethysmography
  - D. thermal dilution
  - E. electromagnetism
- 52. Pressure in the superior vena cava is influenced by the**
- A. right ventricular performance
  - B. position of the patient
  - C. intra-abdominal pressure
  - D. mean airway pressure
  - E. competence of the tricuspid valve
- 53. It is necessary to know the arterial  $PCO_2$  in order to measure**
- A. carbon dioxide output
  - B. physiological dead space
  - C. minute volume of ventilation
  - D. residual lung volume
  - E. functional residual capacity
- 54. A pressure volume loop can measure**
- A. lung compliance
  - B. airway resistance
  - C. intra-pleural pressure
  - D. functional residual capacity
  - E. closing volume

- 55. Measurement of the relationship between intracranial pressure and volume assesses**
- A. the integrity of the blood-brain barrier
  - B. cerebral compliance
  - C. cerebral blood flow
  - D. cerebral metabolic rate
  - E. cerebral vascular diameter
- 56. In a supine young adult with a residual volume of 1200 ml**
- A. closing volume will decrease with increasing age
  - B. closing volume will be approximately 1000 ml
  - C. closing capacity will be decreased by general anesthesia
  - D. closing capacity is approximately 1700 ml
  - E. total lung capacity is about 5000 ml
- 57. Concerning manometers:**
- A. pressure which supports a 10mm column of mercury will support a 13.6cm column of water
  - B. 1 kPa is equal to a pressure of 7.5mm Hg
  - C. the two limbs of a fluid manometer must be of equal diameter
  - D. a mercury barometer used to measure atmospheric pressure is sealed with a vacuum above the surface of the liquid
  - E. aneroid gauges do not contain liquid
- 58. Concerning the measurement of body fluid spaces:**
- A. indocyanine green is excreted unchanged in the urine
  - B. extracellular fluid volume is measured using deuterium
  - C. intracellular fluid volume is measured indirectly from extracellular volume and total body water
  - D. plasma volume is measured with iodine labelled serum albumin
  - E. chromium labelled red cells are used to measure blood volume

59. **The following can be used in the statistical analysis of the results of a clinical investigation**
- A. unpaired t-test
  - B.  $\chi^2$  (chi-squared) test
  - C. analysis of variance
  - D. sequential analysis
  - E. paired t-test
60. **Concerning the following statements:**
- A. the null hypothesis states that the two treatments are equally effective
  - B. the significance level is a probability value that ensures that the outcome is clinically significant
  - C. the standard deviation is a measure of the central value of the sample
  - D. the standard error is used for the estimation of confidence intervals
  - E. blood pressure is measured on an ordinal scale

## Sample questions ITA/Part I Paper B

1. **Mechanical hyperventilation in a normal patient during the entire course of anaesthesia is associated with**
  - A. markedly diminished requirements for post-operative analgesia
  - B. a shift to the right of the oxyhaemoglobin dissociation curve
  - C. a decrease in PaO<sub>2</sub>
  - D. postoperative hypoventilation
  - E. cutaneous vasodilatation
  
2. **Predictors of cardiac morbidity and mortality include**
  - A. aortic stenosis
  - B. myocardial infarction occurring 2 months previously
  - C. a prolonged QT (frequency corrected) interval
  - D. occasional ventricular extra-systoles
  - E. intra-operative nodal rhythm
  
3. **Patients with untreated hypothyroidism show**
  - A. resistance to hypnotics
  - B. depression of cardiac performance
  - C. high voltage T waves on the ECG
  - D. increased sensitivity to non-depolarising neuromuscular blocking drugs
  - E. delayed return of consciousness after anaesthesia
  
4. **Concerning therapy with anticholinergic drugs:**
  - A. the action of glycopyrrolate is longer than atropine
  - B. atropine increases dead space
  - C. atropine premedication should be avoided in febrile children
  - D. 1.0 mg atropine produces complete vagal blockade in a 70 kg man
  - E. hyoscine (scopolamine) premedication should be avoided in elderly patients

5. **Intense peripheral vasoconstriction can be reversed with**
- A. phentolamine
  - B. sodium nitroprusside
  - C. esmolol
  - D. nifedipine
  - E. high spinal anaesthesia
6. **Drugs known to increase barrier pressure at the gastro-oesophageal junction include**
- A. droperidol
  - B. atropine
  - C. metoclopramide
  - D. fentanyl
  - E. neostigmine
7. **Recognised treatment of a post-operative thyrotoxic crisis includes**
- A. sedation
  - B. plasmapheresis
  - C. corticosteroids
  - D. propranolol
  - E. calcitonin
8. **Recognised complications of abdomino-perineal resection of the rectum include**
- A. deep venous thrombosis
  - B. paralytic ileus
  - C. air embolism
  - D. postoperative atelectasis
  - E. uraemia
9. **Factors associated with the development of postoperative atelectasis include**
- A. abdominal pain
  - B. COPD
  - C. ankylosing spondylitis
  - D. thoracic surgery
  - E. spinal anaesthesia

- 10. Impairment of left ventricular function resulting from ischaemia during general anaesthesia**
- A. occurs prior to ST segment depression
  - B. fully recovers when ST segment depression returns to normal
  - C. is best recognised by monitoring the pulmonary capillary wedge pressure
  - D. involves a decrease in left ventricular compliance
  - E. can occur in a normal heart
- 11. True statements about endotracheal intubation include**
- A. severe laryngeal lesions can be caused by endotracheal tubes
  - B. pneumomediastinum can occur
  - C. diffusion of nitrous oxide into air-inflated cuffs can double intracuff pressure
  - D. after 48 hours of intubation, endotracheal tubes should be replaced by tracheostomy tubes
  - E. most major cuff-related injuries result from use of inappropriately high cuff-to-tracheal-wall pressures
- 12. Compared with the adequately spontaneously breathing patient, neuromuscular paralysis and controlled ventilation in the supine, anaesthetised patient are associated with**
- A. improved overall matching of ventilation to perfusion
  - B. increased  $VD/VT$
  - C. decreased anterior diaphragmatic motion
  - D. increased posterior diaphragmatic motion
  - E. improved venous return to the right heart
- 13. Possible mechanisms for the bronchodilation, which occurs during halothane anaesthesia, include**
- A. inhibition of release of bronchoactive substances
  - B. stimulation of beta-adrenergic receptors
  - C. inhibition of acetylcholine release within the lung parenchyma
  - D. inhibition of alpha-adrenergic receptors
  - E. stimulation of carotid body chemoreceptors

- 14. Problems with routine preoperative chest X-rays include**
- A. a high percentage of false positive
  - B. a high percentage of false negative
  - C. a considerable risk of radiation induced cancer
  - D. very few unsuspected positive findings
  - E. a high percentage of clinically insignificant, positive findings
- 15. Venous air embolism is associated with**
- A. arterial hypotension
  - B. a decrease in end-tidal carbon dioxide concentration
  - C. cardiac arrhythmias
  - D. a decrease in pulmonary vascular resistance
  - E. a decrease in intracranial pressure
- 16. Postoperative cerebral vasospasm in a patient with a subarachnoid haemorrhage**
- A. does not occur provided that the aneurysm has been clipped successfully
  - B. may be treated with calcium antagonists
  - C. usually occurs two weeks after operation
  - D. is prevented by postoperative ventilation
  - E. may produce a hemiplegia
- 17. In the diagnosis of brain-stem death**
- A. clinical criteria are invalid in a hypothermic patient
  - B. caloric testing is used to test the integrity of the Vth cranial nerve
  - C. an isoelectric EEG is pathognomonic
  - D. absence of neuromuscular blockade should be confirmed with a peripheral nerve stimulator
  - E. reflex movements of the legs may still occur
- 18. Methods of reducing intracranial pressure include**
- A. mannitol
  - B. sodium nitroprusside
  - C. ventricular drainage
  - D. isoflurane
  - E. nimodipine

- 19. Acute subdural haematoma**
- A. results from haemorrhage from the middle meningeal artery
  - B. is frequently bilateral
  - C. is often associated with secondary bleeding following decompression
  - D. is a complication of chronic alcoholism
  - E. carries a good prognosis when associated with a basal skull fracture
- 20. The following are associated with increased intracranial pressure following head trauma:**
- A. papilloedema
  - B. pulmonary oedema
  - C. hypertension
  - D. a Glasgow coma score greater than 12
  - E. bradycardia
- 21. A left sided double lumen endobronchial tube**
- A. can be used for left lower lobectomy
  - B. is suitable for a right sided broncho-pleural fistula
  - C. has a dedicated orifice for the left upper lobe bronchus
  - D. is used in preference to a right sided tube wherever possible
  - E. is contraindicated in a patient with a right pneumothorax
- 22. Recognised advantages of controlled ventilation in the treatment of flail chest include**
- A. reduction of paradoxical ventilation
  - B. the ability to use positive end-expiratory pressure (PEEP)
  - C. decreased pain
  - D. prevention of pneumothorax
  - E. accelerated healing of rib fractures
- 23. Appropriate treatment of moderate postoperative hypoxaemia following coronary artery bypass grafting in a ventilated patient with normal cardiovascular parameters includes**
- A. digitalisation
  - B. addition of positive end-expiratory pressure (PEEP)
  - C. dopamine infusion
  - D. sodium nitroprusside infusion
  - E. increasing the  $FiO_2$

- 24. Atropine administration during anaesthesia to a patient with severe mitral stenosis can cause increased**
- A. myocardial oxygen consumption
  - B. left atrial pressure
  - C. left ventricular filling pressure
  - D. pulmonary capillary wedge pressure
  - E. cardiac output
- 25. Recognised anaesthetic techniques for septoplasty include the use of**
- A. a throat pack
  - B. sodium nitroprusside induced hypotension
  - C. nasal preparation with topical cocaine
  - D. a nasogastric tube
  - E. anticholinergic premedication
- 26. Traction on the medial rectus muscle of the eye produces**
- A. hypertension
  - B. bradycardia
  - C. mydriasis
  - D. Homer's syndrome
  - E. cardiac dysrhythmias
- 27. Recognised methods of providing pain relief in the early stages of labour include**
- A. thoracic epidural
  - B. intrathecal analgesia
  - C. intramuscular pethidine
  - D. hypnosis
  - E. nitrous oxide in oxygen
- 28. During the third trimester of pregnancy there is**
- A. an increase in alveolar ventilation
  - B. a decrease in haematocrit
  - C. decreased basal metabolic rate
  - D. an increased blood volume
  - E. an increase in functional residual capacity

**29. Drugs which should be avoided in the first trimester of pregnancy include**

- A. ondansetron
- B. penicillin
- C. metoclopramide
- D. tetracycline
- E. metronidazole

**30. The umbilical arteries**

- A. originate from the fetal internal iliac arteries
- B. convey venous blood from the fetus
- C. contain blood at a  $PO_2$  of 5.3 KPa (40mmHg)
- D. insert into the fetal inferior vena cava
- E. are unaffected by autoregulation

**31. Post-laparotomy pain contributes to**

- A. polyuria
- B. nausea
- C. hypoxaemia
- D. decreased functional residual capacity (FRC)
- E. tachycardia

**32. Section of the trigeminal ganglion results in**

- A. facial paralysis
- B. loss of salivary secretion
- C. ptosis of the eyelid
- D. vasodilatation of the facial skin
- E. corneal anaesthesia

**33. Meralgia paraesthetica is relieved by nerve block of the**

- A. lingual nerve
- B. trigeminal nerve
- C. lateral femoral cutaneous nerve
- D. lumbar sympathetic nerve
- E. femoral nerve

- 34. Side effects of opioid epidural analgesia include**
- A. itching
  - B. hypotension
  - C. hypoventilation
  - D. sedation
  - E. urinary retention
- 35. Factors influencing the level of a spinal block include the**
- A. specific gravity of the anaesthetic solution
  - B. volume of the anaesthetic solution
  - C. dose of local anaesthetic
  - D. age of the patient
  - E. position of the patient
- 36. Likely causes of coagulopathy in a patient who becomes septic following colonic resection include:**
- A. deficiency of vitamin K
  - B. liver damage due to halothane
  - C. disseminated intravascular coagulation
  - D. unsuspected von Willebrand's disease
  - E. administration of low-dose subcutaneous heparin
- 37. Reduction in cardiac output associated with high positive end expiratory pressure therapy (PEEP) is secondary to**
- A. diminished venous return to the right heart
  - B. diminished left ventricular performance due to shift of the intraventricular septum
  - C. increased right ventricular afterload
  - D. decreased heart rate
  - E. carbon dioxide retention
- 38. Positive end expiratory pressure (PEEP) decreases**
- A. intrathoracic blood volume
  - B. PaCO<sub>2</sub>
  - C. functional residual capacity
  - D. intracranial pressure
  - E. pulmonary capillary wedge pressure

39. **A decrease in mixed venous oxygen saturation is commonly due to**
- A. decreased cardiac output
  - B. decreased metabolic rate
  - C. increased pulmonary artery pressure
  - D. a left to right shunt
  - E. decreased arterial oxygen content
40. **Possible causes of sudden onset of systolic and diastolic murmurs in a patient with infective endocarditis include**
- A. pulmonary embolism
  - B. inferior myocardial infarction
  - C. prolapsed mitral valve cusp
  - D. aortic valve rupture
  - E. dissecting aortic aneurysm
41. **A high urinary osmolality is associated with**
- A. diabetes insipidus
  - B. impaired renal function
  - C. mannitol administration
  - D. diabetic ketoacidosis
  - E. dehydration
42. **Suitable sedative agents for use in intensive care include infusion of**
- A. propofol
  - B. midazolam
  - C. droperidol
  - D. etomidate
  - E. clonidine
43. **A low arterial PO<sub>2</sub> with a high PCO<sub>2</sub> is associated with**
- A. pulmonary oedema
  - B. upper airway obstruction
  - C. lobar pneumonia
  - D. acute salicylate poisoning
  - E. exercise at high altitude

**44. In acute hepatic failure**

- A. the prothrombin time is normal
- B. serum alkaline phosphatase may be normal
- C. serum albumin is often below 10gm/L
- D. pulse oximetry is inaccurate in the presence of jaundice
- E. serum LDH is a sensitive index of hepatocellular damage

**45. The urinary output of creatinine depends upon**

- A. protein intake
- B. urinary volume
- C. glomerular filtration rate
- D. catabolism
- E. the muscle mass of the individual

**46. Probable causes of profound hypotension on commencement of artificial ventilation in a patient suffering multiple trauma include**

- A. tension pneumothorax
- B. hypovolaemia
- C. cardiac tamponade
- D. fat embolism
- E. flail chest

**47. Physical signs characteristic of acute pulmonary embolism include**

- A. dyspnoea
- B. large 'a' wave on the central venous pressure (CVP) curve
- C. systolic arterial hypertension
- D. cyanosis
- E. tachycardia

**48. Decompression sickness**

- A. is associated with avascular necrosis of bone
- B. is due to an alveolar oxygen deficit
- C. is cured by breathing a mixture of oxygen and helium at atmospheric pressure
- D. symptoms can occur four hours after the initial drop in pressure
- E. is avoided if nitrogen is included in the inspired gas mixture

- 49. Acute pancreatitis is associated with**
- A. retroperitoneal haemorrhage
  - B. tetany
  - C. pleural effusions
  - D. gastric distension
  - E. hyperglycaemia
- 50. Appropriate agents for reversal of acute bronchoconstriction include**
- A. salbutamol
  - B. ketamine
  - C. adrenaline
  - D. sodium chromoglycate
  - E. atropine
- 51. Factors correlated with increasing P(A-a)O<sub>2</sub> after surgery in the morbidly obese include**
- A. location of incision
  - B. type of incision
  - C. weight/height ratio
  - D. location of excess body fat
  - E. intraoperative paralysis and artificial ventilation
- 52. Findings associated with near drowning in fresh water include**
- A. atelectasis
  - B. increased lung compliance
  - C. loss of pulmonary surfactant
  - D. increase in pulmonary venous admixture
  - E. haemolysis
- 53. The “blood-brain barrier”**
- A. is formed by the arachnoid villi
  - B. is less permeable in the newborn
  - C. is freely permeable to bicarbonate ions
  - D. does not permit free passage of organic anions
  - E. has similar functional characteristics to a cell membrane

- 54. Neonates with respiratory distress syndrome have**
- A. decreased alveolar perfusion
  - B. left-to-right cardiac shunts
  - C. increased work of breathing
  - D. normal alveolar surfactant activity
  - E. a metabolic alkalosis
- 55. Concerning the neonatal respiratory system:**
- A. the narrowest part of the airway is below the glottis
  - B. thoraco-pulmonary compliance is higher than in the adult
  - C. the mainstem bronchi leave the trachea at roughly equal angles
  - D. the glottis lies higher in the neck than in the adult
  - E. inspiration is predominantly diaphragmatic
- 56. Immediate treatment of an asthmatic child, unsuccessfully treated with epinephrine (adrenaline), who has become hypoxic, drowsy, hypercarbic and acidotic includes**
- A. administration of sodium bicarbonate
  - B. intravenous diazepam
  - C. aminophylline infusion
  - D. intubation and ventilation
  - E. nebulised salbutamol
- 57. Concerning low platelet counts:**
- A. before major surgery they should be increased to at least 50,000/ml
  - B. in the non-surgical patient, counts of 40,000/ml are associated with increased haemorrhage
  - C. platelet concentrate administration is the preferred method of treatment
  - D. fresh frozen plasma should be administered to thrombocytopenic patients prior to surgery
  - E. they are invariably associated with altered platelet function
- 58. Thyroid stimulating hormone (TSH)**
- A. increases blood flow to the thyroid gland
  - B. is released from the hypothalamus
  - C. is available as a synthetic product
  - D. is elevated in iodine deficiency
  - E. concentration is used to monitor thyroid hormone replacement therapy

**59. In pre-renal oliguria**

- A. urinary sodium concentration is greater than 75mmol/l
- B. urinary specific gravity is greater than 1015
- C. urine/plasma osmolality ratio is greater than 1.8
- D. urine/plasma urea ratio is greater than 10
- E. urine/plasma creatinine ratio is greater than 30

**60. Differential diagnoses of an enlarged heart shadow observed on a chest X-ray include**

- A. congestive cardiac failure
- B. pericardial effusion
- C. mitral valve disease
- D. hypertrophic subaortic stenosis
- E. hiatus hernia