Sample questions ITA/Part I
Paper A

1. Inadequate tissue oxygenation may occur, in spite of a normal $\text{PaO}_2$, 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\textsubscript{2} at which the oxygen content is 50 ml/100 ml blood
   C. percentage saturation of hemoglobin at a PaO\textsubscript{2} of 50 mmHg (6.7kPa)
   D. oxygen content of plasma at a PaO\textsubscript{2} of 50 mmHg (6.7kPa)
   E. PO\textsubscript{2} 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. decreases 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**
   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 deoxyribonucleic 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 PaCO₂  
   D. it is contraindicated in patients with broncho-pleural fistula  
   E. CO₂ 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 PCO₂ 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**
asesses

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. $X^2$ (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 Pa\textsubscript{O}_2
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 FiO₂
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. PaCO₂  
   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 PO₂ with a high PCO₂ 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)O₂ 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