

**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL
SCIENCES AND TECHNOLOGY, TRIVANDRUM**

ENTRANCE EXAMINATION: NOVEMBER 2016

PROGRAMME: DM/PDCC Cardiothoracic and Vascular Anaesthesia

Duration: 90 minutes

Total Marks:100

(Select the most appropriate answer; Each question carries one mark)

1. The normal duration of the QRS complex is less than
 - A. 0.01 second
 - B. 0.05 second
 - C. 0.10 second
 - D. 0.15 second

2. Which of the following measurement reflects the status of medium-sized to small-sized airways?
 - A. FEF₂₀₀₋₁₂₀₀ (Forced Expiratory Flow 200–1200)
 - B. PEFR (Peak Expiratory Flow rate)
 - C. MVV (Maximum Voluntary ventilation)
 - D. FEF_{25%-75%} (Forced Expiratory Flow 25%–75%)

3. Spot the **INCORRECT** statement regarding myocardial infarction.
 - A. Anterior wall infarction: changes classically in leads V₃-V₄, but often also on leads V₂ and V₅.
 - B. Inferior wall infarction: changes in leads III and VF.
 - C. Lateral wall infarction: changes in leads I, VL, V₅-V₆.
 - D. True posterior wall infarction: Dominant R waves in lead V₆.

4. All the following are features of right ventricular hypertrophy **EXCEPT**:

- A. Tall R waves in lead V₁.
- B. Deep S waves in lead V₆.
- C. Inverted T waves in leads V₅-V₆.
- D. Right axis deviation and sometimes right bundle branch block.

5. Which artery gives rise to the obtuse marginal artery?

- A. Right coronary artery
- B. Left anterior descending artery
- C. Circumflex artery
- D. Posterior descending artery

6. All the following decreases the pulmonary vascular resistance **EXCEPT**:

- A. Hypocapnia
- B. Increasing PaO₂
- C. Alkalemia
- D. Hypothermia

7. The major ECG finding associated with hypocalcemia is:

- A. Prominent U waves
- B. Bifid T waves
- C. ST interval prolongation
- D. QRS widening

8. Identify the **FALSE** statement regarding Heparin.

- A. It is poorly protein bound.
- B. It enhances the effect of antithrombin III on factor Xa.
- C. It prevents the formation of thrombin from prothrombin.
- D. Thrombocytopenia may occur during treatment.

9. Identify the **WRONG** statement regarding Myasthenia Gravis.

- A. There are usually antibodies to acetyl choline.
- B. There may be asymmetric muscle weakness.
- C. About 70% of patients with myasthenia gravis have thymic hyperplasia. This may not show as thymic enlargement.
- D. Myasthenics are exquisitely sensitive to the muscle relaxant properties of aminoglycoside antibiotics.

10. All the following are normal cardiovascular pressures **EXCEPT**:

- A. Right Ventricle peak systolic: 60-90 mmHg
- B. Pulmonary artery mean: 9-19 mmHg
- C. Left ventricular end-diastolic: 5-12 mmHg
- D. Left atrium mean pressure: 2-12 mmHg

11. Normal static compliance in an adult is

- A. 15 mL/cm H₂O
- B. 35 to 100 mL/cm H₂O
- C. 20 to 35 mL/cm H₂O
- D. 35 to 50 mL/cm H₂O

12. When electrocardiogram (ECG) electrodes are placed for a patient undergoing a magnetic resonance imaging (MRI) scan, which of the following is **TRUE**?

- A. Electrodes should be as close as possible and in the periphery of the magnetic field
- B. Electrodes should be as close as possible and in the center of the magnetic field
- C. Placement of electrodes relative to field is not important as long as they are far apart
- D. ECG cannot be monitored during an MRI scan

13. Hypokalemia is **NOT** associated with one of the following ECG features:

- A. Increase in the amplitude of P-wave
- B. ST- segment depression
- C. A decrease in the T-wave amplitude
- D. Shortened PR interval

14) Select the **CORRECT** statement about a physiological cardiac cycle

- A. During isovolemic contraction, the ventricular volume decreases
- B. The interventricular septum moves toward right ventricle during ventricular systole
- C. Maximum filling of ventricles occurs during diastasis.
- D. The Left Ventricular End Diastolic pressure (LVEDP) falls below left atrial pressure during early diastole

15) Systemic inflammatory response syndrome (SIRS) is manifested by all of the following **EXCEPT**:

- A. Core temperature $<36^{\circ}\text{C}$ or $>38^{\circ}\text{C}$
- B. Tachycardia >90 beats/min
- C. White blood count $>12,000$ cells/mm³, or <4000 cells/mm³
- D. Clinical or microbiological evidence of infection.

16. Spot the **INCORRECT** statement.

- A. The ED_{50} is the dose of a drug required to produce a specific effect in 50% of individuals to whom it is administered.
- B. The LD_{50} is the dose of a drug required to produce death in 50% of patients (or animals) to whom it is administered.
- C. The therapeutic index of a drug is the ratio between the LD_{50} and the ED_{50} .
- D. Efficacy is the concentration associated with a 50% drug effect.

17. Spot the **INCORRECT** statement.

- A. Macrosshock refers to disturbances of neural or muscular function, or both, caused by application of large voltages or currents.
- B. Microshock refers to the direct application of very small voltages or currents to the heart by means of external or internal cardiac pacemaker electrodes.
- C. Because 2mA is the Line Isolation Monitor (LIM) warning level, the LIM provides protection against microshock hazards.
- D. $10\mu A$ is the maximum leakage of current allowable through electrodes or catheters contacting the heart.

18. Chitra heart valve prosthesis is which type of artificial valve?

- A. Tilting-disc
- B. Bileaflet
- C. Ball-cage
- D. Bioprosthesis

19. Identify **WRONG** statement about ECG features:

- A. Type I Second-degree AV block is associated with Wenckebach periodicity ✓
- B. Peaked p waves $>2.5\text{mm}$ indicate left atrial enlargement ✓
- C. Right bundle branch with left anterior fascicular block is associated with left axis deviation
- D. Therapeutic effect of digoxin is associated with shortened QT interval ✓

20. What is ejection fraction?
- A. The difference between the end-diastolic volume and the stroke volume
 - B. The stroke volume divided by the end-diastolic volume
 - C. The stroke volume multiplied by the end-diastolic volume
 - D. The difference between the end-diastolic volume and the end-systolic volume
21. Which one of the following is an Angiotensin II Receptor blocker?
- A. Ramipril
 - B. Losartan
 - C. Nesiritide
 - D. Disopyramide
22. All the following are indications for the use of Intra-Aortic Balloon Pump **EXCEPT**:
- A. Refractory Ventricular Failure
 - B. Cardiogenic Shock
 - C. Impending Myocardial Infarction
 - D. Severe Aortic Regurgitation
23. 1: 200,000 adrenaline prolongs the effect of epidural anesthesia with lidocaine as well as ropivacaine. What is the concentration of adrenaline in 1 ml of this solution?
- A. 0.05mg/ml
 - B. 0.5mg/ml
 - C. 0.005mg/ml
 - D. 0.0005mg/ml
24. Therapeutic serum Digoxin level is approximately:
- A. 0.5 to 2.5 nanogram/ml
 - B. 3 to 4 nanogram/ml
 - C. 5 to 7.5 nanogram/ml
 - D. 20 to 25 nanogram/ml
25. Spot the **ABNORMAL** value.
- A. PO₂ of venous blood = 40 mmHg
 - B. PCO₂of venous blood = 46 mmHg
 - C. Standard Bicarbonate = 33 – 36 mmol/L
 - D. Base Excess = +2.5 - 2.5 mEq/litre

26. What percentage of the coronary oxygen content does the myocardium extract under resting conditions?

- A. 50 to 55%
- B. 60 to 65%
- C. 70 to 75%
- D. 80 to 90%

27. Which one of the following is a Class III Antiarrhythmic drug (Agents that block Potassium channels and prolong repolarization)?

- A. Amiodarone
- B. Procainamide
- C. Metoprolol
- D. Verapamil

28. Spot the **INCORRECT** statement.

- A. Normal Cardiac output in the neonate is 80 mL/kg/min
- B. Normal Systolic pressure in the neonate is 50-90 mmHg
- C. Normal Diastolic pressure in the neonate is 25-60 mmHg
- D. Normal Estimated blood volume in the neonate is 90 mL/kg

29. All the following changes take place at birth **EXCEPT**:

- A. pH and arterial oxygen tension rise.
- B. Pulmonary Vascular Resistance falls
- C. Blood flow through the lungs and the left atrium ↑
- D. SVR decreases while pressure in the IVC and flow through the right atrium both ↑.

30. Regarding Central Venous Pressure Waveform Components, which one of the following is **INCORRECT**?

- A. a wave: end diastole; atrial contraction
- B. c wave: early systole; isovolumic ventricular contraction, tricuspid motion toward the right atrium
- C. v wave: late systole; systolic filling of the atrium
- D. x descent: early diastole; early ventricular filling, diastolic collapse

31. Identify the **FALSE** statement.

- A. The sympathetic system usually predominates in the heart over the inhibitory parasympathetic system
- B. Oxygensaturation is greater in the inferior vena cava than in the superior vena cava
- C. Coronary venous blood is 30% saturated
- D. Coronary venous blood has a PO_2 of 18 to 20 mm Hg.

32. Which one of the following is **NOT** a cause of increased $EtCO_2$?

- A. Hyperthermia
- B. Shivering or convulsions
- C. Sepsis
- D. Pulmonary embolism

33. Identify the **WRONG** statement.

- A. Patients with no antigens on their cells (type O blood) will not have anti-A or anti-B antibodies in the plasma.
- B. Platelets should be administered through a filter.
- C. FFP must be ABO compatible.
- D. Cryoprecipitate is the precipitate that remains when FFP is thawed slowly at $4^\circ C$.

34. Which one of the following is the composition of sodalime when dry?

- A. calcium hydroxide (94%), sodium hydroxide (5%), potassium hydroxide (1%); silicates, kieselguhr, and indicator dye (<1%)
- B. calcium hydroxide (5%), sodium hydroxide (94%), potassium hydroxide (1%); silicates, kieselguhr, and indicator dye (<1%)
- C. calcium hydroxide (85%), sodium hydroxide (14%), potassium hydroxide (1%); silicates, kieselguhr, and indicator dye (<1%)
- D. calcium hydroxide (85%), sodium hydroxide (5%), potassium hydroxide (10%); silicates, kieselguhr, and indicator dye (<1%)

35. All the following are actions of insulin **EXCEPT**:

- A. Increases glycogen synthesis
- B. Increases triglyceride breakdown in adipocytes
- C. Decreases proteolysis.
- D. Inhibits glycogenolysis and gluconeogenesis.

36. Identify the **WRONG** statement.

- A. Cushing's reflex is severe hypertension associated with reflex bradycardia to maintain perfusion of the brain.
- B. The Bainbridge reflex causes decreased Heart Rate when vagal tone is high and the Right Atrium or central veins are distended.
- C. The oculocardiac reflex is caused by traction or pressure on the globe, leading to bradycardia and hypotension
- D. The Bezold-Jarisch reflex causes hypotension, bradycardia, and parasympathetically induced coronary vasodilation in response to noxious stimuli to the ventricular wall.

37. **Pericardial effusion** causes all the following **EXCEPT**:

- A. Low QRS voltage,
- B. ST-segment elevation,
- C. Electrical alternans.
- D. PR interval prolongation

38. All the following are indications for the use of Intra-Aortic Balloon Pump **EXCEPT**:

- A. Refractory Ventricular Failure
- B. Cardiogenic Shock
- C. Impending Myocardial Infarction
- D. Severe Aortic Regurgitation

39. What is the function of cricothyroid muscle?

- A. It relaxes the vocal cords
- B. It is abductor of vocal cords
- C. It is tensor of vocal cords
- D. It closes glottis

40. All intrinsic muscles of larynx are supplied by recurrent laryngeal nerve **EXCEPT**:

- A. Cricothyroid
- B. Posterior cricoarytenoid
- C. Lateral cricoarytenoid
- D. Transverse arytenoids

41. Determinants of coronary perfusion pressure are:

- A. Systolic arterial pressure & left ventricular end diastolic pressure (LVEDP)
- B. Mean arterial pressure & LVEDP
- C. Diastolic arterial pressure & LVEDP
- D. Mean arterial pressure & pulse pressure

42. Identify the **WRONG** statement.

- A. With obstructive airway diseases, Total Lung Capacity and Residual Volume are increased.
- B. In patients with restrictive lung disease, lung volume, Total Lung Capacity, and vital capacity are all reduced.
- C. In patients with restrictive lung disease, airway resistance is normal.
- D. In patients with restrictive lung disease, FEV1 is decreased.

43. With regard to the coronary circulation, which of the following statements is **INCORRECT?**

- A. It constitutes approximately 20% of the cardiac output.
- B. The most important regulators of coronary vascular tone are local metabolic factors.
- C. More than 80% of coronary perfusion occurs during diastole.
- D. Autoregulation of coronary perfusion occurs between perfusion pressure of 50 & 120 mmHg.

44. Useful therapy for hypercyanotic "tet spells" in patients with tetralogy of Fallot might include any of the following **EXCEPT**

- A. Esmolol
- B. Morphine
- C. Phenylephrine
- D. Isoproterenol

45. Which one of the following statements regarding the a-wave of the central venous pressure waveform is **TRUE**?

- A. is caused by atrial contraction & is not seen in atrial fibrillation ✓
- B. is caused by atrial filling during ventricular contraction
- C. decreases with inspiration
- D. is immediately followed by the v-wave

46. Identify the **FALSE** statement.

Oxygen toxicity to the lung is due to:

- A. inspired oxygen (FIO₂) above 0.6
- B. prolonged exposure
- C. increased arterial partial pressure of oxygen ✓
- D. the effect of oxygen on pulmonary vessels

47. The standard compliances for the adult and paediatric breathing circuits respectively are:

- A. 1ml / cm H₂O and 0.25-0.5 ml/ cm H₂O
- B. 2.5ml / cm H₂O and 0.7- 1ml /cm H₂O
- C. 5ml/ cm H₂O and 1.5- 2.5ml/ cm H₂O
- D. 10ml/cm H₂O and 3.5-5ml/ cm H₂O

48. Which of the following receptors is most commonly identified as the defective receptor in patients who experience malignant hyperthermia?

- A. Ryanodine receptor
- B. Dihydropyridine receptor
- C. Acetylcholine receptor
- D. Gamma-aminobutyric acid receptor

49. Effective inflation of an intra-aortic balloon catheter should occur at which of the following times?
- A. Immediately after P wave on ECG
 - B. Immediately after closure of aortic valve
 - C. During opening of the aortic valve
 - D. During systolic upstroke on arterial tracing
50. Afterload reduction is beneficial during anesthesia for noncardiac surgery in patients with each of the following conditions **EXCEPT**
- A. Aortic insufficiency
 - B. Patent ductus arteriosus
 - C. Tetralogy of Fallot
 - D. Congestive heart failure
51. What is the minimal time after angioplasty and placement of a drug-eluting stent that dual antiplatelet therapy should be continued before considering stopping it for elective surgery?
- A. 3 months
 - B. 6 months
 - C. 1 year
 - D. 18 months
52. Which one of the following is the recommended IV dose of adrenaline for neonatal resuscitation?
- A. 0.01 to 0.03 mg/kg per dose
 - B. 0.1 to 0.3 mg/kg per dose
 - C. 0.001 to 0.003 mg/kg per dose
 - D. 0.05 to 1.0 mg/kg per dose
- 2/29

53. Which one of the following is **FALSE** regarding sodium nitroprusside?

- A. It decreases both afterload and preload.
- B. It is a pulmonary vasodilator.
- C. It can safely be used in patients with high intracranial pressure
- D. It can cause reflex tachycardia

54. The correct location for placement of the V5 lead is:

- A. Midclavicular line, third intercostal space
- B. Anterior axillary line, fourth intercostal space
- C. Midclavicular line, fifth intercostal space
- D. Anterior axillary line, fifth intercostal space

55. Which of the following values is **NOT CORRECT** for isoflurane?

- A. Boiling point of Isoflurane is 49°C
- B. MAC value for isoflurane is 1.2 Vol%.
- C. The Saturated Vapour Pressure of isoflurane at 20°C is 250 mmHg
- D. Blood/gas solubility coefficient of isoflurane is 4.1.

56. Spot the **INCORRECT** statement regarding volatile anesthetic agents.

- A. Oil/gas solubility of a volatile agent is related to potency
- B. Blood/gas partition coefficient relates to the speed of onset
- C. The lower the blood/gas partition coefficient, the less soluble the volatile anesthetic agent
- D. The more the blood solubility of the volatile agent, the more rapid the induction.

57. Which one of the following is the best index of preload?

- A. Central venous pressure
- B. Pulmonary capillary wedge pressure
- C. Left ventricular end-diastolic volume
- D. Left ventricular end-diastolic pressure

58. Regarding Ringer's Lactate, which one of the following is **NOT** correct?

- A. It has 131 mmol/L of sodium.
- B. It has 111 mmol/L of chloride.
- C. It has 29 mmol/L of lactate.
- D. It has 10 mmol/L of potassium

59. Regarding spinal and epidural block, which of the following statements is **FALSE**?

- A. Epidural sympathetic block is at the same dermatomal level as the sensory block
- B. Subarachnoid block will usually give a sympathetic block between 2 and 6 dermatomes higher than the sensory block
- C. Systemic blood levels of the drug are higher with subarachnoid block than with epidural block
- D. Complications of epidural block include intravascular injection, subarachnoid injection, neurologic injury, and epidural hematoma.

60. When CPAP is in use, the total amount of work of breathing is provided by the:

- A. patient
- B. ventilator
- C. patient and ventilator
- D. pressure level of CPAP

61. The Ramsay Scale is commonly used to assess the degree of:

- A. agitation
- B. pain
- C. sedation
- D. consciousness

62. A patient on ventilator support who is recovering from drug overdose has a PaO₂ of 76 mmHg on 30% (0.3) oxygen. What is the PaO₂/FiO₂ index? Is it normal based on the pulmonary measurement criteria for weaning?

- A. 25.3 mmHg, normal
- B. 25.3 mmHg, abnormal
- C. 253 mmHg, normal
- D. 253 mmHg, abnormal

76 / 0.3 = 253

63. A Rapid Shallow Breathing Index of which of the following values is predictive of weaning success?

- A. <100 breaths/min/L
- B. >100 breaths/min/L
- C. < 200 breaths/min/L
- D. > 200 breaths/min/L

64. Which one of the following is **CORRECT**?

- A. 1cm H₂O = 0.735 mm Hg = 0.0142 psig = 0.09806 kPa
- B. 1cm H₂O = 0.0735 mm Hg = 0.00142 psig = 0.009806 kPa
- C. 1cm H₂O = 7.35 mm Hg = 0.142 psig = 0.9806 kPa
- D. 1cm H₂O = 73.5 mm Hg = 1.42 psig = 9.806 kPa

65. An endotracheal tube with an internal diameter (ID) of 2.5 mm equals to which one of the following?

- A. 12 French (Fr)
- B. 10 French (Fr)
- C. 8 French (Fr)
- D. 6 French (Fr)

2.5 mm = 0.25 cm = 25 French (Fr)
25 Fr = 2.5 cm = 25 mm
25 Fr = 2.5 cm = 25 mm
25 Fr = 2.5 cm = 25 mm

66. Regarding pulse oximetry, which one of the following is **NOT TRUE**?

- A. The probe consists of two light emitting diodes producing beams at red and infrared frequencies.
- B. It is accurate ($\pm 2\%$) in the 70% to 100% range of arterial oxygen saturation.
- C. Carbon monoxide causes a false low reading of the arterial oxygen saturation.
- D. Pulse oximeters average their readings every 10 to 20 seconds.

67. Spot the **INCORRECT** statement.

- A. Normal aortic valve area is 3.0-4.0 cm²
- B. Normal mitral valve area is 4.0-6.0 cm²
- C. The 3 leaflets of the Tricuspid valve are: Septal, Medial, and Lateral
- D. Mitral valve leaflets include the Anterior mitral valve leaflet and the Posterior mitral valve leaflet.

68. All the following are true regarding face masks used during anaesthesia **EXCEPT**:

- A. Face masks can have a significant effect on the apparatus dead space if the wrong size is chosen.
- B. The Rendell Baker mask does not have a cuff.
- C. The proximal end of the mask has a 15 mm inlet to fit the angle piece or catheter mount.
- D. Excessive pressure by the mask may cause injury to the branches of the trigeminal or facial nerves.

69. Which of the following statements is **UNTRUE**?

- A. Donor of O Blood group can donate blood to Recipients of O, A, B, & AB groups.
- B. Donor of A Blood group can donate blood to Recipients of A & AB groups.
- C. Donor of B Blood group can donate blood to be transfused to Recipients of B, & AB groups.
- D. Donor of AB Blood group can donate blood to Recipients of A, B, & AB groups.

70. Which of the following statements is **UNTRUE** regarding electrolyte composition in body fluids?

- A. Sodium: 10 mEq/L in intracellular fluid & 140 mEq/L in extracellular fluid.
- B. Potassium: 150 mEq/L in intracellular fluid & 4.50 mEq/L in extracellular fluid.
- C. Magnesium: 2 mEq/L in intracellular fluid & 40 mEq/L in extracellular fluid. ✗
- D. Calcium: 1mEq/L in intracellular fluid & 5 mEq/L in extracellular fluid.

71. Difficult endotracheal intubation may be anticipated in all the following **EXCEPT**:

- A. Treacher-Collins syndrome
- B. Pierre Robin syndrome
- C. Klippel-Feil syndrome
- D. Sturge-Weber syndrome

72. All the statements related to upper airway anatomy are correct **EXCEPT**:

- A. Thyromental distance less than 6 cm may be suggestive of difficult intubation. ✓
- B. Mallampati scores tend to be higher in pregnant women than in those who are not pregnant.
- C. Cormack and Lehane Grade IV view allows the laryngoscopist to visualize the epiglottis but not any part of the larynx. ✗
- D. Interincisor distance of less than two finger breadths or less than 3 cm is a predictor of difficult tracheal intubation.

73. The systolic components of the arterial pressure waveform follow which ECG waveform?

- A. P wave
- B. Q wave
- C. R wave
- D. S wave

74. Which is NOT a potential complication of a stellate ganglion block?

- A. Recurrent laryngeal nerve paralysis
- B. Subarachnoid block
- C. Brachial plexus block
- D. Increased heart rate

75. What epidural dose of bupivacaine will give sensory analgesia similar to 10 mL of 2% lidocaine?

- A. 5 mL of 0.25%
- B. 10 mL of 0.25%
- C. 5 mL of 0.5%
- D. 10 mL of 0.5%

76. If the recurrent laryngeal nerve were transected bilaterally, the vocal cords would:

- A. Be in the open position
- B. Be in the closed position
- C. Be in the intermediate position (i.e., 2-3 mm apart)
- D. Not be affected unless the superior laryngeal nerve were also injured

77. The pressure gauge on a size "E" compressed-gas cylinder containing O₂ reads 1600 psi. How long could O₂ be delivered from this cylinder at a rate of 2 L/min?

- A. 90 minutes
- B. 140 minutes
- C. 250 minutes
- D. 320 minutes

$$\frac{395}{690} \times \frac{1600}{1600} = 1$$

$$\frac{1600}{690 \times 2} = 1600 \times 1$$

$$\frac{175}{860} = 1$$

78. When the pressure gauge on a size "E" compressed-gas cylinder containing N₂O begins to fall from its previous constant pressure of 750 psi, approximately how many liters of gas will remain in the cylinder?

- A. 200 L
- B. 400 L
- C. 600 L
- D. Cannot be calculated

79. A patient tells his anaesthesiologist that he has a VDD pacemaker. Select the true statement regarding this pacemaker.

- A. It senses and paces only the ventricle
- B. It paces only the ventricle
- C. Its response to a sensed event is always inhibition
- D. It is not useful in a patient with atrioventricular (AV) nodal block

80. Calculate the body mass index (BMI) of a man 2 meters (6 feet 6 inches) tall who weighs 100 kg (220 lb).

- A. 20
- B. 25
- C. 30
- D. 35

$$\frac{200}{2}$$

$$\frac{100}{2 \times 2}$$

81. The P50 for normal adult hemoglobin is approximately

- A. 15 mm Hg
- B. 25 mm Hg
- C. 35 mm Hg
- D. 45 mm Hg

82. The most important buffering system in the body is

- A. Hemoglobin
- B. Plasma proteins
- C. Phosphate
- D. $[\text{HCO}_3^-]$

83. Each of the following will shift the oxyhemoglobin dissociation curve to the right **EXCEPT**

- A. Volatile anesthetics
- B. Decreased Pao_2 ✓
- C. Decreased pH ✓
- D. Increased temperature ✓

84. An acute increase in Paco_2 of 10 mm Hg will result in a decrease in pH of

- A. 0.01 pH unit
- B. 0.02 pH unit
- C. 0.04 pH unit
- D. 0.08 pH unit

85. To reliably obtain which of the following monitoring parameters would you use transesophageal echocardiography rather than a Swan Ganz catheter?

- A. Mixed venous oxygen saturation
- B. Systemic vascular resistance
- C. Left ventricular end-diastolic volume
- D. Pulmonary artery pressure

86. Spot the **INCORRECT** statement:

- A. Mannitol 25 % solution contains 250mg/ml ✓
- B. 1:1000 solution of adrenaline has 1milligram of adrenaline in 1 milliliter. ✓
- C. Dose of adrenaline infusion when used as inotropic support is 0.02 to 0.2 microgram/kg/body weight ✓
- D. Dose of Milrinone is: Loading dose of 100 microgram/kg followed by maintenance infusion of 3-5 microgram/kg/minute.

87. Spot the **INCORRECT** statement:

- A. Normal value of Activated Clotting Time (without heparinisation) is 90 to 130 seconds.
- B. Normal value of Prothrombin Time ranges from 12 to 15 seconds (compare to control).
- C. Normal value of Activated Plasma Thromboplastin Time ranges from 135 to 145 seconds (compare to control).
- D. Normal value of Thrombin Time is < 14 seconds (compare to control).

88. With a circuit compressible volume of 3 mL/cm H₂O, what would be the actual tidal volume (corrected tidal volume) delivered to the patient if the expired tidal volume is 800 mL and the peak inspiratory pressure is 50 cm H₂O?

- A. 500 mL
- B. 650mL
- C. 750 mL
- D. 950 mL

89. Which of the following statements is **UNTRUE**?

- A. Anion gap (AG) is the difference between the measured cations and the measured anions.
- B. Decreased value of AG is seen in hyperlipidemia.
- C. Increased value of AG are seen in hypoalbumiemia.
- D. Increased values of AG are seen in lactic acidosis, diabetic or alcoholic ketoacidosis, salicylate poisoning. ✓

90. Which of the following statements is **UNTRUE**?

- A. Standard bicarbonate is the concentration of HCO_3^- in plasma of fully oxygenated blood, equilibrated with a PCO_2 of 40 mmHg.
- B. Normal PCO_2 of venous blood = 75 mmHg ✗
- C. Base excess is the amount of acid in mmol/litre that has to be added to the Extra Cellular Fluid to restore its pH to 7.40 at a PCO_2 of 40 mmHg. ✗
- D. Standard bicarbonate excludes the respiratory component & indicates the metabolic component of the acid-base disturbance. Normal values are 22 – 26 mmol/L.

91. Which of the following statements is **UNTRUE**?

- A. Metabolic alkalosis due to diuretic use is chloride responsive ✓
- B. Salicylate poisoning causes metabolic acidosis by lactate accumulation & respiratory alkalosis by direct stimulation of respiratory centre.
- C. NaHCO_3 has been shown to improve outcome in lactic acidosis. ✗
- D. In chronic respiratory acidosis, HCO_3^- should increase 3-5 mEq/L for every 10mmHg rise in PCO_2

92. Which of the following statements is **UNTRUE**?

- A. Anion gap (AG) is a measure of relative deficiency of unmeasured anions. ✓
- B. Anion gap is measured as difference between plasma Na^+ concentration & sum of plasma Cl^- & HCO_3^- concentration. ✓
- C. Measuring anion gap helps to determine if Metabolic acidosis is due to accumulation of nonvolatile acids (e.g., lactic acid) or a net loss of HCO_3^- (e.g., diarrhea) ✓
- D. In normal AG metabolic acidosis there is net loss of HCO_3^- & compensatory increase in Chloride concentration. This condition is also called hyperchloremic metabolic acidosis.

93. Which of the following statements is **UNTRUE**?

A. Motor innervation of the Cricothyroid (adductor tensor) is supplied by the recurrent laryngeal nerve. †

B. The Internal division of the superior laryngeal nerve provides sensory innervation for epiglottis, base of tongue, and supraglottic mucosa.

C. The sensory innervation of the nasal mucosa arises from 2 divisions of the trigeminal nerve.

D. During laryngoscopy, with the curved MacIntosh blade, the maximal cervical motion occurs at the atlanto-occipital and atlantoaxial joints.

94. ↑^{se} in Left atrial (LA) pressure, LA enlargement, ↑^{sed} risk of atrial fibrillation; In severe cases, Pulmonary hypertension, Right Ventricular (RV) hypertrophy, & RV failure. If these are the cardiovascular changes, what is the diagnosis?

A. Mitral insufficiency

B. Aortic insufficiency

C. Mitral stenosis

D. Aortic stenosis

95. The distance from the center of the magnet that is usually considered to be safe for ferromagnetic objects is:

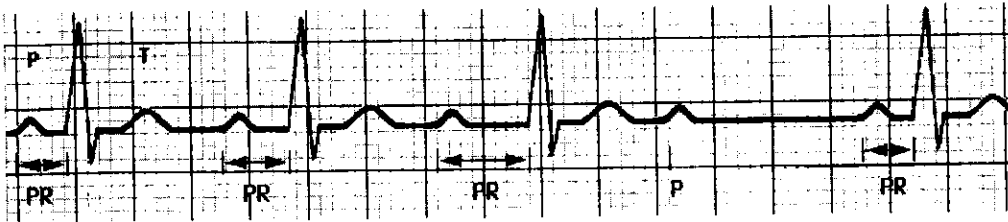
A. Beyond the 2-gauss line

B. Beyond the 3-gauss line

C. Beyond the 4-gauss line

D. Beyond the 5-gauss line

96. Identify the ECG abnormality:



- A. Mobitz type II block
- B. Mobitz type I block or Wenckebach block
- C. Complete heart block with supraventricular escape rhythm
- D. 2:1 Atrioventricular block

97. Chest x-ray shows that the heart is enlarged with a narrow "pedicle" giving the so-called "egg on a string" appearance. What is the diagnosis?

- A. Tetralogy of Fallot
- B. Transposition of the Great Arteries
- C. Total anomalous pulmonary venous connection
- D. Tricuspid Atresia

98. If the QRS complex is occurring once per 4 large squares on the ECG paper what is the heart rate (beats/min)?

- A. 150
- B. 100
- C. 75
- D. 60

5 =

5 =

99. Spot the **INCORRECT** statement.

- A. During sinus rhythm approximately one third of the cardiac cycle is systole and two thirds of the cardiac cycle is diastole.
- B. Normal Left Ventricular end-diastolic and end-systolic volumes are 120 ml and 40 ml respectively.
- C. The resting coronary blood flow in an adult man is approximately 500ml/minute.
- D. Ventricular myocardium consumes approximately 10 ml oxygen per 100 gm of muscle per minute under resting conditions. ✓

100. Spot the **INCORRECT** statement.

- A. Amiodarone has slow hepatic metabolism resulting in an elimination half-life of 26-107 days. ✓
- B. Hemodynamic effects of amiodarone include reductions in heart rate, blood pressure, systemic & coronary vascular resistance. ✓
- C. Oral amiodarone is not effective in the treatment of ventricular arrhythmias.
- D. Amiodarone reduces the elimination of digoxin

**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL
SCIENCES AND TECHNOLOGY, TRIVANDRUM**

ENTRANCE EXAMINATION: NOVEMBER 2016

PROGRAMME: DM/PDCC Cardiothoracic and Vascular Anaesthesia

Duration: 90 minutes

Total Marks:100

(Select the most appropriate answer; Each question carries one mark)

1. C
2. D
3. D
4. C
5. C
6. D
7. C
8. A
9. A
10. A
11. B
12. B
13. D
14. D
15. D
16. D
17. C
18. A
19. B
20. B

- 21. B
- 22. D
- 23. C
- 24. A
- 25. C
- 26. C
- 27. A
- 28. A
- 29. D
- 30. D
- 31. A
- 32. D
- 33. A
- 34. A
- 35. B
- 36. B
- 37. D
- 38. D
- 39. C
- 40. A
- 41. C
- 42. D
- 43. A
- 44. D
- 45. A
- 46. C
- 47. C

48. A

49. B

50. C

51. C

52. A

53. C

54. D

55. D

56. D

57. C

58. D

59. C

60. A

61. C

62. C

63. A

64. A

65. A

66. C

67. C

68. C

69. D

70. C

71. D

72. C

73. C

74. D

- 75. D
- 76. C
- 77. C
- 78. B
- 79. B
- 80. B
- 81. B
- 82. D
- 83. B
- 84. D
- 85. C
- 86. D
- 87. C
- 88. B
- 89. C
- 90. B
- 91. C
- 92. A
- 93. A
- 94. C
- 95. D
- 96. B
- 97. B
- 98. C
- 99. C
- 100. C