



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, तिरुवनंतपुरम् -11
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES &
TECHNOLOGY,
THIRUVANANTHAPURAM—695 011

ENTRANCE EXAMINATION : ACADEMIC SESSION JANUARY 2020

PROGRAM: DM and PDCC Neuroanaesthesia

Time: 90 minutes

Max. Marks: 100

(Select the most appropriate answer)
(There are no negative marks for wrong answers)

1. Compared to peripheral venous cannula, which of the following is false regarding central venous cannula?
 - a) Offers low resistance to fluid infusions.
 - b) Fluids cannot be given rapidly in central venous cannula
 - c) Despite similar size, central venous cannula lumens are small.
 - d) The flow rate in CVC is one quarter of peripheral cannula.

2. Using of desflurane in conventional variable bypass vaporiser does not cause which of the following?
 - a) Unpredictable output can occur.
 - b) High fresh gas flow rate is required to deliver desired concentration.
 - c) Excessive heating of the vaporiser occurs.
 - d) Uncontrolled vaporisation occurs.

3. Regarding airway irritation caused by volatile anesthetic agents, which of the following is untrue?
 - a) Desflurane causes maximum irritation
 - b) Smokers have airway irritation regardless of type of volatile agents.
 - c) The irritation is mediated by non specific cation-channel transient receptor potential.
 - d) High MAC concentration of desflurane suppresses the airway irritation.

4. Dead space ventilation is increased in all of the following conditions except?
 - a) Pulmonary embolism
 - b) Pulmonary edema
 - c) Chronic obstructive airway disease
 - d) Bronchiectasis

5. Interscalene brachial plexus block is contraindicated in which of the following condition?

- a) Contralateral pneumonectomy
- b) Ipsilateral pneumonectomy
- c) COPD patients
- d) Bronchial asthma

6. Compared to adults which of the following statement is true for CSF in paediatric patients?

- a) CSF volume (ml/kg) is more in infants compared to adult
- b) CSF pressure is more in infants compared to adult.
- c) CSF volume is less in spinal compartment compared to adult
- d) Less local anesthetics are required for spinal anesthesia compared to adult.

7. Which of the following condition is common presentation of thrombophilia?

- a) Cerebral venous sinus thrombosis
- b) Disseminated intravascular coagulation
- c) Pulmonary embolism
- d) Deep Venous thrombosis of lower limbs

8. Which of the following virus is the most common cause of post transfusion hepatitis?

- a) Hepatitis B
- b) Hepatitis C
- c) Human immunodeficiency virus (HIV)
- d) Cytomegalovirus. (CMV)

9. Which of the following techniques is considered gold standard for cardiac output monitoring?

- a) Bioimpedance technique
- b) Echocardiography
- c) Lithium indicator technique
- d) Thermodilution technique

10. In which of the following condition central venous pressure will be greater than pulmonary capillary wedge pressure?

- a) Ischemic Tricuspid regurgitation
- b) Congestive cardiac failure
- c) Sick sinus syndrome
- d) Left ventricular dysfunction

11. Which of the following is the most common acute complication of central venous cannulation using internal jugular vein?

- a) Arterial puncture
- b) Pneumothorax
- c) Phrenic nerve injury
- d) Catheter malposition

12. Regarding EtCO₂ monitoring during one lung ventilation (OLV), which of the following is untrue?

- a) EtCO₂ value is less reliable for PaCO₂
- b) PaCO₂ -EtCO₂ gradient decreases during OLV
- c) If EtCO₂ increases > 5mm Hg during OLV, it is a warning sign
- d) Minute ventilation has no correlation with EtCO₂

13. Which of the following is known as Programmed cell death?

- a) Apoptosis
- b) Necrosis
- c) Infarction
- d) Amyloidosis

14. Which of the following constituent is higher in CSF compared to plasma?

- a) Sodium
- b) Chloride
- c) Bicarbonate
- d) Potassium

15. In which of the following scenarios, pseudocholinesterase is considered not deficient?

- a) Pregnancy
- b) History of prolonged recovery following succinyl choline
- c) Low levels of plasma cholinesterase
- d) Dibucaine number is 80

16. Which one of the following is incorrect for propofol use?

- a) Relieves cholestatic pruritus
- b) Useful antiemetic action
- c) Can trigger Malignant Hyperthermia
- d) Can cause severe sepsis

- 17. Atipamezole is used for reversing the action of which of the following agents?**
- a) Dexmedetomidine
 - b) Propofol
 - c) Low molecular weight heparin
 - d) Dabigatran
- 18. Which of the following anesthetic agent produces paradoxical high BIS value?**
- a) Sevoflurane
 - b) Dexmedetomidine
 - c) Methohexital
 - d) Ketamine
- 19. Which of the following condition increases mixed venous oxygen saturation?**
- a) Transfusion
 - b) Hypovolemia
 - c) Shivering
 - d) Agitation
- 20. The supply of anterior spinal artery is to which portion of spinal cord?**
- a) Anterior half of spinal cord
 - b) Heml spinal cord
 - c) Anterior two thirds of spinal cord
 - d) Central portion of spinal cord
- 21. Occurrence of Pneumocephalus is seen as a complication in 100% of patients who were operated upon in which of the following positions?**
- a) Sitting position
 - b) Concorde position
 - c) Prone position
 - d) Reverse Trendelenberg position
- 22. Succinyl choline can be administered safely without risk of hyperkalemia in cervical spine injury if injury is less than**
- a) Less than 6 hours
 - b) Less than 24 hours
 - c) Less than 7 days
 - d) Less than 3 days

23. The osmolality of Plasma Lyte in mOsm/Kg is

- a) 295
- b) 273
- c) 308
- d) 310

24. Neuronal death occurs at what value of cerebral blood flow (ml/100g/min)?

- a) 50
- b) 20
- c) <15
- d) <6

25. The gold standard of ICP measurement is

- a) Ventricular catheters
- b) Intra parenchymal fiberoptic devices
- c) Trans Cranial Doppler
- d) Optic Nerve Sheath Diameter measurement

26. Serum osmolality is calculated as, Serum osmolality =

- a) $(\text{serum Na})/2 + \text{glucose}/18 + \text{BUN}/2.8$
- b) $(\text{serum Na}) \times 2 + \text{serum K} + \text{glucose}/16 + \text{BUN} \times 2.8$
- c) $(\text{serum Na}) \times 2 + \text{glucose}/18 + \text{BUN}/2.8$
- d) $(\text{serum Na}) \times 2 + \text{glucose} \times 18 + \text{BUN}/2.8$

27. A ratio of partial pressure of arterial oxygen/fraction of inspired O₂ (P/F ratio) of 200-300, according to Berlin definition, indicates which of the following?

- a) Mild ARDS
- b) Moderate ARDS
- c) Severe ARDS
- d) Acute Lung Injury (ALI)

28. Among the following, which statement is wrong about Ventilator Associated Pneumonia (VAP)?

- a) Pneumonia developing in patients who are mechanically ventilated after more than 24 hours of intubation
- b) Estimated mortality rate is 5% to 27%
- c) Involves micro aspiration of oropharyngeal secretions
- d) Presence of invasive devices is a risk factor

29. Carbon monoxide as a degradation product can be formed, when desiccated absorbents are used during anesthesia using

- a) Isoflurane
- b) Sevoflurane
- c) Enflurane
- d) Desflurane

30. Risk factors for Postoperative Cognitive Dysfunction (POCD) all the following except:

- a) Increasing age
- b) Long duration of anesthesia
- c) High level of education
- d) Second operation

31. All are clinical signs of malignant hyperthermia except:

- a) Masseter spasm
- b) Tachypnea and tachycardia
- c) Respiratory alkalosis
- d) Metabolic acidosis

32. Ossermann classification is used for:

- a) Guillain barre syndrome
- b) Myasthenia gravis
- c) Muscular dystrophy
- d) Parkinsons syndrome

33. All the following are ECG changes of hyperkalemia except:

- a) Prolonged PR interval
- b) Sine wave pattern
- c) Narrow QRS complex
- d) Bradycardia

34. Following an epidural injection, the bioavailability of local anaesthetic drug in CSF is approximately ____ % of epidural drug ?

- a) 20%
- b) 30%
- c) 40%
- d) 50%

35. Pathophysiologic changes with brain death includes all except:

- a) Hypoglycaemia
- b) Diabetes insipidus
- c) Hypertension
- d) Hypotension

36. All the following are true except:

- a) Maintenance doses of propofol should be based on total body weight
- b) Anesthetic drug dosing of fentanyl should be determined on the basis of ideal body weight
- c) Anesthetic drug dosing is based on Ideal Body Weight for vecuronium
- d) Lean Body Mass is a good weight approximation to use for doses of hydrophilic medications.

37. Risk factors for perioperative acute kidney injury include all except

- a) Use of vasoconstrictor
- b) Anti arrhythmic drug use
- c) Erythrocyte transfusion
- d) None of the above

38. Which statement is false regarding effect of anaesthetic drugs on hepatic function?

- a) Sevoflurane and isoflurane maintain hepatic arterial buffer response
- b) Dosage adjustments are indicated when dexmedetomidine is used in patients with hepatic dysfunction
- c) Dosage adjustments are not indicated when mivacurium is used in patients with hepatic dysfunction
- d) Remifentanyl has high clearance, rapid elimination, and recovery that is almost independent of the dose or duration of infusions.

39. All of the following statement regarding management of brain dead patients for organ donation are true except:

- a) Vasopressin is recommended as the initial therapy of choice for potential heart donors by the American College of Cardiology
- b) Donor management should include active warming to maintain a body temperature above 35^o C before and during organ procurement
- c) Insulin management should target a glucose level less than 140 mg/dL
- d) In pulmonary management, low fraction of inspired oxygen concentration (FIO₂), and relatively high positive end-expiratory pressure (PEEP) can be used

40. Gurd's diagnostic criteria of fat embolism syndrome include all except:

- a) Retinal changes
- b) Renal changes
- c) Thrombocytopenia and anemia
- d) Low ESR

41. Regarding physiological changes in old age, all are true except:

- a) Increased closing capacity
- b) Increase in sympathetic nervous system activity
- c) Serum creatinine is a good predictor of renal function in older individuals
- d) Heart failure with preserved ejection fraction may be seen.

42. Regarding TOF monitoring all are true except:

- a) When only one response is detectable, the degree of neuromuscular block is 90% to 95%.
- b) TOF < 0.90 is associated with functional impairment of the pharyngeal and upper esophageal muscles
- c) The TOF ratio must exceed 1.0 when using accelerated myography to exclude clinically important residual neuromuscular block
- d) When the fourth response reappears, neuromuscular block is usually 25% to 50%.

43. A revised cardiac risk index score of 4 carries a ___ % risk of major adverse cardiac events:

- a) 3.4%
- b) 5.4%
- c) 7.4%
- d) 10.4%

44. Which of the following drugs should be continued on the day of surgery?

- a) NSAIDs
- b) Loop diuretics
- c) Monoamine oxidase inhibitors
- d) Sildenafil

45. In individuals with Wolff-Parkinson-White (WPW) syndrome, treatment of supra-ventricular tachycardia is with which of the following drugs?

- a) β -adrenergic blockers
- b) Calcium channel blockers
- c) Digoxin
- d) Lidocaine

46. Sensory input from lower pharynx and upper part of larynx can be blocked with which of the following?

- a) Glossopharyngeal nerve block
- b) Superior laryngeal nerve block
- c) Trans laryngeal nerve block
- d) Only with spray as you go technique

47. Which of the following agent is a very potent coronary vasodilator to abolish coronary autoregulation ?

- a) Adenosine
- b) Isoflurane
- c) Nitrous oxide
- d) Sevoflurane

48. Hypoxemia is defined as a PaO₂ less than?

- a) 80 mm Hg.
- b) 100 mm Hg
- c) 60 mm Hg
- d) Depends on FIO₂ administered

49. Best way to induce therapeutic hypothermia rapidly is by which of the following method?

- a) Forced air cooling
- b) Endovascular cooling
- c) Administration of refrigerated intravenous fluids
- d) Immersion in cold water

50. Criterion for selection of patients for acute normovolemic haemodilution includes which of the following?

- a) Likelihood of transfusion exceeding 20%
- b) Preoperative haemoglobin level of at least 10 g/dl
- c) Absence of severe hypertension
- d) Active infection

51. Which of the following tests has maximum sensitivity for the detection of pheochromocytoma ?

- a) Vanillyl mandelic acid excretion
- b) Catecholamine excretion
- c) Metanephrine excretion
- d) Abdominal CT

52. Estrogens as part of hormone replacement therapy should be stopped, how many days prior to surgery for coagulation function to return to baseline?

- a) 24 hrs
- b) 5 days
- c) 7-10 days
- d) 30 days

53. Most common nerve injury in ASA Closed Claims database 1990-2010 is which of the following?

- a) Ulnar nerve
- b) Spinal cord
- c) Brachial plexus
- d) Peroneal nerve

54. All of the following are causes of delirium except;

- a) Hypocalcemia
- b) Hypermnatremia
- c) Steroid use
- d) Nonconvulsive status epilepticus

55. Clinical criterion for diagnosing metabolic syndrome include which of the following?

- a) Triglycerides > 150mg/dl
- b) Waist circumference >102 cm in men
- c) Fasting glucose >110 mg/dl
- d) All the above

56. Equianalgesic parenteral dose of fentanyl corresponding to parenteral 10 mg of morphine is

- a) 0.1 mg
- b) 16.5 mg
- c) 1.0 mg
- d) 1.65 mg

57. Which of the following is not an indication for muscle relaxant use in ICU?

- a) Increased intracranial pressure
- b) To abolish seizures
- c) Acute respiratory distress syndrome
- d) To abolish shivering

58. Patients considered opioid tolerant are those who are regularly taking at least one of these following :

- a) 60 mg oral morphine per day
- b) 25 µg transdermal fentanyl per hour
- c) 30 mg oral oxycodone per day
- d) All the above are correct

59. All are true regarding urinary retention associated with the neuraxial administration of opioids except

- a) It is the result of a decrease in the detrusor muscle's strength of contraction
- b) Incidence is more with neuraxially administered opioids than when given systemically
- c) Incidence and severity of urinary retention is proportional to the opioid dose
- d) May be treated with low-dose naloxone

60. Fifty eight years old gentleman presents to the emergency room with history of head injury. On evaluation, he does not open eyes to noxious stimuli, makes incomprehensible sounds and has an abnormal flexion to noxious stimuli. Has a GCS of:

- a) E2V2M2
- b) E1V2M3
- c) E1V3M2
- d) E1V3M3

61. Brain receives ___ % of cardiac output

- a) 21
- b) 7
- c) 25
- d) 15

62. Cerebral perfusion pressure (CPP) is calculated as

- a) $CPP = CBF - ICP$
- b) $CPP = MAP - ICP$
- c) $CPP = SBP - CVP$
- d) $CPP = CBF - CVP$

63. What is the rate of CSF formation in humans ?

- a) 0.35 to 0.40 mL/hour
- b) 150-200 mL/day
- c) 1.2-2.6 mL/hour
- d) 500 to 600 mL/day

64. Regarding Post Anesthesia Care Unit (PACU) discharge criteria, which is false?

- a) The requirement to drink and retain clear liquids should not be part of a routine discharge protocol
- b) A minimum mandatory stay is required
- c) Discharge should occur after patients have met specified criteria
- d) Outpatients should be provided with written instructions regarding post-procedure diet

65. Intraoperative factors that are predictive of postoperative delirium include?

- a) Hematocrit < 30%
- b) Hypotension
- c) Use of nitrous oxide
- d) Anesthetic technique (GA Vs regional)

66. Osmolarity of Injection Mannitol 20% is?

- a) 300 mOsm/L
- b) 514 mOsm/L
- c) 1024 mOsm/L
- d) 1098 mOsm/L

67. Which of the following antiemetic medication/s is/are serotonin receptor antagonist/s?

- a) Hydroxyzine
- b) Anzemet
- c) Ondansetron
- d) Both B&C

68. The purpose of the Pin Index Safety System (PISS) is to

- a). Prevent the misconnection of hospital gas supply lines to the anesthesia workstation.
- b) Avoid incorrect gas cylinder connections in the anesthesia workstation.
- c) Minimize delivery of a hypoxic mixture
- d) None of the above

69. The following drugs can be considered reasonable first choice agents for Post Discharge Nausea and Vomiting (PDNV) except:

- a) Dexamethasone
- b) Scopolamine
- c) Palonosetron
- d) Ondansetron

70. Which of the following group of agents is most commonly associated with perioperative anaphylaxis?

- a) Antibiotics
- b) Colloids
- c) Opioids
- d) Muscle relaxants

71. Regarding organs procured from donation after cardiac death (DCD) donors, which is true?

- a) They are not exposed to the physiologic derangements of brain death
- b) They are at greater risk for ischemia-reperfusion injury than organs from donation after brain death (DBD) donors
- c) Category III (Impending cardiac arrest) DCD is the ideal source for organ transplant
- d) All of the above are true

72. True mechanical closure of ductus arteriosus by fibrosis occurs

- a) After 2-3 weeks of age
- b) After 1 week of age
- c) After 2-3 months of age
- d) Immediately after birth

73. Regarding comparison of laryngeal anatomy between the adult and the child, which is false?

- a) The narrowest part of the infant larynx occurs at the level of the cricoid cartilage
- b) The narrowest portion in most of the adults is at the level of the cricoid cartilage.
- c) The infant larynx is cylindrical
- d) The vocal cords are angled in the infant

74. The oxygen content of the blood of the foetus is

- a) 10 mL of oxygen per 100 mL of blood
- b) 20 mL of oxygen per 100 mL of blood
- c) 30 mL of oxygen per 100 mL of blood
- d) 40 mL of oxygen per 100 mL of blood

75. Regarding the pharmacodynamics of neuromuscular blocking agents in geriatric patients, which is false?

- a) Elimination half-life of atracurium is unaffected in older individuals
- b) Plasma clearance of vecuronium is slower in older patients
- c) Rocuronium is associated with a prolonged duration in older patients
- d) Cisatracurium undergoes Hofmann degradation and is unaffected by age

76. The monitor that is specifically checked for in a WHO surgical safety check list is

- a) ECG
- b) Pulse oxymetry
- c) Non invasive blood pressure (NIBP)
- d) Capnography

77. Which of the following is NOT a property of Labetalol?

- a) Blocks alpha1 activity
- b) Partial agonism at beta 2 receptors
- c) Blocks alpha 2 activity
- d) Inhibit neuronal uptake of Nor adrenaline

78. All of the following are the effects of Anesthetics on respiratory physiology EXCEPT:

- a) Decrease in FRC
- b) Atelectasis
- c) Blunting of hypoxic pulmonary vasoconstriction
- d) Reduction in respiratory work

79. Which of the following conditions is associated with the highest chance of developing post operative pulmonary complications?

- a) Age > 70years
- b) History of COPD
- c) Serum Albumin < 30g/l
- d) Partially or fully dependent status

80. The most common electrolyte disturbance in hospitalised patients is

- a) Hyperkalemia
- b) Hypokalemia
- c) Hypomagnesemia
- d) Hyponatremia

81. Target PaCo₂ level in a ventilated patient with Traumatic brain injury in the first 24 hours is

- a) 20 mm of Hg
- b) 25 mm of Hg
- c) 30 mm of Hg
- d) 35 mm of Hg

82. Syndrome of inappropriate ADH secretion is a form of

- a) Isotonic hyponatremia
- b) Isovolumic hypotonic hyponatremia
- c) Hypovolemic hypotonic hyponatremia
- d) Hypervolemic hypotonic hyponatremia

83. International 10-20 system refers to

- a) System of grading coma
- b) System of placement of electrodes
- c) System of stimulation of cortex
- d) System of grading subarachnoid hemorrhage

84. The administration of succinylcholine to an otherwise healthy individual for an elective surgical procedure increases the plasma K⁺ levels by approximately

- a) 1 meq /dl
- b) 0.5 meq /dl
- c) 0.25 meq/dl
- d) 0.75 meq/dl

85. Which of the following zones in liver is responsible for metabolism of drugs?

- a) Zone 1
- b) Zone 2
- c) Zone 3
- d) All of the above

86. More reliable Clinical Tests of Postoperative Neuromuscular Recovery is

- a) Sustained head lift for 4 seconds
- b) Sustained leg lift for 3 seconds
- c) Sustained handgrip for 5 seconds
- d) Arm lift to the opposite shoulder

87. As per ASRA guidelines postoperative epidural catheter is to be removed

- a) 2 hours before first LMWH dose
- b) 4 hours before first LMWH dose
- c) 6 hours before first LMWH dose
- d) 8 hours before first LMWH dose

88. Which of the following intravenous fluid is iso-osmolar

- a) 0.45% Sodium chloride
- b) 0.9% Sodium chloride
- c) Ringer lactate
- d) Dextrose Normal saline

89. Following Transfusion Associated Lung Injury (TRALI) Clinical symptoms and signs

- a) appear 6-8 hours after transfusion and are in force within 12 hours
- b) appear 12-14 hours after transfusion and are in force within 16 hours
- c) appear 24 hours after transfusion and are in force within 36 hours
- d) appear 1 to 2 hours after transfusion and are in force within 6 hours

90. The cuff used to prevent LASER induced damage to Endotracheal tube is

- a) Portex cuff
- b) Naruke cuff
- c) Bivona cuff
- d) Rusch cuff

- 91. Not a component of modified ALDRETE recovery score**
- a) Verbal response
 - b) Consciousness
 - c) Activity
 - d) Respiration
- 92) In paediatric patients, the intravenous fluid administration during the first 12 hours in the postoperative period is guided by which of the following?**
- a) 4-2-1 rule
 - b) 2-1-0.5 rule
 - c) 5ml/kg/hour
 - d) 8ml/kg/hour
- 93) Factors leading to postoperative hypertension are**
- a) Arterial hypoxemia
 - b) Hypervolemia
 - c) Emergence excitement
 - d) All of the above
- 94. The main substance used for energy production in the brain is**
- a) Ketone bodies
 - b) Amino acids
 - c) Glucose
 - d) Pyruvate
- 95. Agent tried for anaesthetic preconditioning (for neuroprotection) is**
- a) Halothane
 - b) Nitrous oxide
 - c) Desflurane
 - d) Sevoflurane
- 96. An example of secondary brain injury following trauma is**
- a) Neuronal damage from contusion
 - b) Ischemia from Vasospasm
 - c) Diffuse axonal injury
 - d) Subdural hematoma
- 97. False statement regarding the management of intraoperative brain bulge is**
- a) Hyperventilation
 - b) Osmotic agents use
 - c) Head up with institution of Positive end expiratory pressure
 - d) Augmentation of anaesthesia with Propofol

98. During sitting position for each 1.25 cm movement of head above the level of the heart, local arterial pressure is reduced by approximately

- a) 0.5 mmHg
- b) 1.0 mmHg
- c) 1.5 mmHg
- d) 2 mmHg

99. Most sensitive non invasive monitor to detect venous air embolism is

- a) Transesophageal echocardiography
- b) ETCO₂
- c) End tidal nitrogen concentration
- d) Precordial Doppler

100. Which of the following is NOT true regarding peri-operative myocardial infarction (MI)?

- a) Commonest cause is type 2 MI
- b) Tachycardia is the main cause
- c) Fluid overload can be a contributing factor
- d) Can be avoided by prophylactic beta blockers

