

MIZORAM PUBLIC SERVICE COMMISSION

TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF GRADE-II OF MIZORAM HEALTH SERVICE (SPECIALIST SUB-CADRE) UNDER HEALTH & FAMILY WELFARE DEPARTMENT, GOVERNMENT OF MIZORAM. OCTOBER, 2022

PAPER - III (TECHNICAL) ANAESTHESIOLOGY DEPARTMENT

Time Allowed : 3 hours

Full Marks : 200

All questions carry equal marks of 2 each.

Attempt all questions.

- Which statement is false?
 - An anaesthesiologist shall recognize a responsibility to participate in activities contributing to an improved community
 - An anaesthesiologist who serves as an expert witness in a judicial proceeding shall possess the qualifications and offer testimony in conformance with the ASA "Guidelines for Expert Witness Qualifications and Testimony"
 - An anaesthesiologist shall not engage in misconduct in research and/or publication
 - An anaesthesiologist should need not take into account the environmental impact of their clinical management and decision making
- Basic Principles of Medical Ethics 'Autonomy' means
 - Anaesthesiologists abide by the doctrine of do no harm to their patients
 - Do good for the patient in every situation
 - The patient is an independent being who can make fully informed decisions regarding his/her own health care and coercion is unethical
 - Anaesthesiologists should be fair when providing their services to surgical patients
- Which term refers to 'do no harm' to their patients ?
 - Autonomy
 - Nonmaleficence
 - Justice
 - Beneficence
- Ethical issues in anaesthesiology can be categorised into
 - Preoperative and postoperative
 - Intraoperative and Postoperative
 - Intraoperative only
 - Preoperative, Intraoperative and Postoperative
- As per Indian Penal Court an informed consent have
 - 5 essential components
 - 3 essential components
 - 4 essential components
 - 6 essential components
- The statement not true in ISA guidelines for practising anaesthesiologists on how to maintain anaesthesia records
 - Anaesthesia: Type of anaesthesia
 - Airway management device
 - Maintenance of anaesthesia
 - Post-operative pain protocol not required

7. All are Components of Informed Consent except
 - (a) Disclosure
 - (b) Comprehension
 - (c) Competence
 - (d) Presence of outside control
8. Which of the following statement is untrue in case of death on the table
 - (a) A doctor can give the Death Certificate (DC) only if he is sure of the cause of death
 - (b) Complete all the relevant documentation and tally the notes among the consultants
 - (c) Clean the OT; discard all ampules used during the procedure
 - (d) The OT setup should never be found with expired drugs
9. Which is untrue in the statement 'Anaesthesiologists can be dragged to the courts in following instances'
 - (a) Hypoxic brain damage leading to death during general anaesthesia
 - (b) For missing pre-anaesthetic evaluation and ensuring availability of proper equipment
 - (c) Disclosure of information\
 - (d) Neurological deficit after neuraxial or regional anaesthesia
10. During pre-anaesthetic assessment recommended risk model which provides an estimate of mortality for patients being considered for surgical intervention is
 - (a) Surgical Outcome Risk Tool (SORT) and SORT-clinical judgement models
 - (b) APACHE Scores
 - (c) ASA classification
 - (d) Reynolds Risk Score
11. Prior to surgery breast milk should be discontinued for
 - (a) 6 hours
 - (b) 4 hours
 - (c) 8 hours
 - (d) 2 hours
12. Which statement is false of major clinical predictors of increased perioperative cardiac risk ?
 - (a) An acute MI documented less than 7 days previously
 - (b) Recent MI of more than 7 days but less than 1 month before surgery
 - (c) Unstable or severe angina
 - (d) Asymptomatic arrhythmias with no underlying heart disease
13. Energy expenditures for activities such as eating, dressing, walking around the house, and dishwashing range from
 - (a) 1 to 4 METS
 - (b) 4 TO 10 METS
 - (c) 5 METS
 - (d) 10 METS
14. Surgery-specific risk for noncardiac surgery can be stratified as all except
 - (a) High
 - (b) Intermediate
 - (c) Low
 - (d) No risk
15. Which of the following drugs is least likely to be effective for prophylaxis for postoperative nausea and vomiting?
 - (a) Ondansetron
 - (b) Scopolamine patch
 - (c) Aprepitant
 - (d) Metoclopramide
16. Sedatives, as premedication, must be avoided in which of the following patients?
 - (a) Uncontrolled hypertensive
 - (b) Toddler for tonsillectomy
 - (c) Brain tumour patients
 - (d) Patients with alcohol abuse

17. Antidote for paracetamol poisoning is
- (a) Naloxone
 - (b) N-acetylcysteine (NAC)
 - (c) Atropine
 - (d) Flumazenil
18. If a person suspected of opioid overdosing does not respond within 2 to 3 minutes after administering a dose of naloxone
- (a) Do not repeat naloxone
 - (b) Administer a second dose of naloxone
 - (c) Give atropine
 - (d) Attempt diuresis with diuretic
19. Which statement is false of opioid withdrawal
- (a) Nervousness, restlessness or irritability
 - (b) Tachycardia, hypertension
 - (c) runny nose, sneezing, sweating, yawning, nausea or vomiting
 - (d) Bradycardia, hypotension
20. In methyl alcohol poisoning, there is central nervous system depression, cardiac depression and optic nerve atrophy due to:
- (a) Formaldehyde and formic acid
 - (b) Acetaldehyde
 - (c) Pyridine
 - (d) Acetic acid
21. All of the following are treatment options for toxic alcohol poisoning except
- (a) Fomepizole
 - (b) Hydroxy-cobalamin
 - (c) Thiamine
 - (d) Folic acid
22. Hyperthermia in a patient of poisoning is a pointer to all except
- (a) Ecstasy
 - (b) Selective serotonin reuptake inhibitor
 - (c) Salicylates
 - (d) Chlorpromazine
23. A 30-year-old man has taken two bottles of liquor from the local shop. After about an hour, he develops confusion, vomiting and blurring of vision. He has been brought to the emergency department. He should be given
- (a) Naloxone
 - (b) Diazepam
 - (c) Flumazenil
 - (d) Ethyl alcohol
24. First step in the Chain of Survival is:
- (a) Early CPR with an emphasis on chest compressions
 - (b) Recognition of cardiac arrest and activation of the emergency response system
 - (c) Rapid defibrillation
 - (d) Advanced resuscitation by Emergency Medical Services and other healthcare provider
25. Conventional CPR using chest compressions and mouth-to-mouth breathing in an adult is at a ratio of
- (a) 30:2 compressions-to-breaths
 - (b) 15:2 compressions-to-breaths
 - (c) 30:4 compressions-to-breaths
 - (d) 30:1 compressions-to-breaths
26. In adult victims of cardiac arrest, it is reasonable for rescuers to perform chest compressions at a rate of
- (a) Not less than 100/min
 - (b) Not more than 100/min
 - (c) 100-120/min
 - (d) Not less than 120/min

27. High-quality CPR include all except
- (a) Minimize interruptions in chest compressions
 - (b) Provide compressions of adequate rate and depth
 - (c) Avoid leaning on the victim between compressions
 - (d) Hyper-ventilation
28. All are true about AED except
- (a) Attach the AED and follow the prompts
 - (b) Continue CPR until the AED is turned on and the pads attached
 - (c) The AED pads should be placed as instructed and should not be touching each other
 - (d) AED to be used on children under 1 year of age
29. If a person is unconscious from choking, symptoms may include all except
- (a) Ability to speak
 - (b) Difficulty breathing and noisy breathing with high-pitched sounds while inhaling
 - (c) Weak, ineffective coughing
 - (d) Bluish skin colour
30. The following findings in pupillary examination indicates oculomotor nerve lesion in uncal herniation
- (a) Small pupils (<2 mm)
 - (b) Midsize pupils (4–6 mm) unresponsive to light
 - (c) Maximally dilated pupils (>8 mm)
 - (d) Mixed and dilated pupil(s)
31. The pattern of breathing in Kussmaul respiration commonly associated with diabetic ketoacidosis is
- (a) Deep, laboured breathing
 - (b) Shallow with an extremely depressed respiratory rate
 - (c) Deep and rapid breaths at a rate of at least 25 breaths per minute
 - (d) Quick, shallow inspirations followed by regular or irregular periods of apnoea
32. A head injury patient with a GCS of <8 or scoring U on the AVPU (Alert, responsive to Voice, responsive to Pain, Unresponsive) scale defines
- (a) Severe head injury
 - (b) Brain death
 - (c) Medically induced coma
 - (d) Locked in syndrome
33. The investigation of choice to exclude common pathologies such as intracranial blood, stroke or space-occupying lesions is
- (a) MRI
 - (b) CT brain
 - (c) PET
 - (d) SPECT
34. Which is not a major component of pharmacokinetics
- (a) Bioavailability
 - (b) Concentration
 - (c) Distribution
 - (d) Clearance
35. The following drug is 99% bound to plasma proteins
- (a) Diazepam
 - (b) Atenolol
 - (c) Gentamycin
 - (d) Lithium

- 36.** High plasma protein binding
- (a) Increases availability of free fraction of the drug
 - (b) Increases drug concentration
 - (c) Decreases free unbound fraction of a drug which decreases its potency
 - (d) Occurs in renal failure
- 37.** Bioavailability is
- (a) The difference between the amount of drug absorbed and the amount excreted
 - (b) The proportion of the drug in a formulation that is found in the systemic circulation
 - (c) The AUC relating plasma concentration of drug to time after administration
 - (d) Always identical with different formulations of the same drug
- 38.** Age associated changes in pharmacokinetics include
- (a) Reduction in creatinine clearance
 - (b) Decreased body fat
 - (c) Increase body water
 - (d) A greater reduction in conjugation compared with oxidation
- 39.** Which of the following statement is correct?
- (a) The half-life is the time taken for a parameter to fall to 1/4 its original value
 - (b) Partial agonists act at receptor sites to cause maximal pharmacological effect at high doses
 - (c) Morphine and pethidine have the same potency\
 - (d) A patient with oedema will have an increased volume of distribution of tobramycin
- 40.** The following factors affect anaesthetic uptake with the exception of one which is
- (a) Solubility in the blood
 - (b) Alveolar blood flow
 - (c) Partial pressure difference between alveolar gas and venous blood
 - (d) Indirect correlation with lipid solubility
- 41.** The most potent inhaled anaesthetic is
- (a) Nitrous oxide.
 - (b) Isoflurane
 - (c) Sevoflurane
 - (d) Enflurane
- 42.** Among the currently used anaesthetics Sevoflurane has been demonstrated to have
- (a) The least hepatotoxic effect
 - (b) The least pronounced cardiovascular effects.
 - (c) The most hypotensive effect
 - (d) The fastest onset
- 43.** The following statement for which isoflurane is credited with having the slowest onset of inhalation agents is
- (a) Low MAC
 - (b) Unique molecular structure
 - (c) High blood:gas coefficient
 - (d) High fat:blood coefficient
- 44.** All of the following may reduce the MAC for nitrous oxide except
- (a) Meperidine
 - (b) Advanced age
 - (c) Cocaine
 - (d) Ethanol

45. Lipid solubility of an anaesthetic agent with potency (1/MAC) suggests that
- (a) Acute cocaine or amphetamine use increases MAC
 - (b) Onset of anaesthesia occurs when sufficient molecules of the anaesthetic agent have dissolved in the cell's lipid membranes
 - (c) the constant increase of anaesthetic potency of n-alkanols with increasing chain length
 - (d) Certain conditions like pregnancy, anaemia and hypoxia increases MAC
46. Following are factors that increase anaesthetic requirements with the exception of
- (a) Hyperthermia
 - (b) Hyponatremia
 - (c) Acute cocaine or amphetamine use
 - (d) Pregnancy
47. Barbiturates depress the reticular activating system by
- (a) Stimulating transmission of acetylcholine
 - (b) Enhancing transmission of inhibitory neurotransmitters
 - (c) Activation of opioid receptor
 - (d) Binding to cytochrome P-450
48. Anaesthetic drug having antanalgesic effect is
- (a) Barbiturate
 - (b) Benzodiazepines
 - (c) Inhalational anaesthetics
 - (d) Opioids
49. In susceptible individuals acute intermittent porphyria may be precipitated by
- (a) Midazolam
 - (b) Ketamine
 - (c) Thiopental
 - (d) Fentanyl
50. Effect of benzodiazepines to the ventilatory response to CO₂ is
- (a) Depression
 - (b) Stimulation
 - (c) Both excitatory and depression
 - (d) No effect
51. The following statement about Propofol that is true
- (a) Women requires a lesser dose than men
 - (b) Formulation of 0.025% sodium metabisulfite is to lessen injection discomfort
 - (c) History of egg allergy does not contraindicate the use of propofol
 - (d) 1% propofol in 16% polyoxyethylated castor oil is to help retard the growth of microorganism
52. Intravenous premedication with opioid just prior to induction influence induction of anaesthesia by
- (a) Prevention of aspiration pneumonitis
 - (b) Allaying fear
 - (c) Preventing allergic reactions
 - (d) Lessening anaesthetic requirements
53. Premedication dose of atropine in children is
- (a) 0.002 to 0.004 mg/kg
 - (b) 0.1 to 0.2 mg/kg
 - (c) 0.01 to 0.02 mg/kg
 - (d) 0.02 to 0.04 mg/kg
54. The most effective safe way to control postoperative pain with systemic opioid is by
- (a) Subcutaneous
 - (b) Oral
 - (c) Intramuscular
 - (d) PCA
55. Antibody mediated allergic reactions to postoperative opioid can lead to all except
- (a) Wheezing
 - (b) Flushing
 - (c) Tachycardia
 - (d) Hypertension

56. The following are effects of non-depolarizing neuromuscular blockers except
- (a) Effects potentiated by adrenaline and acetylcholine
 - (b) Potentiated by magnesium and hypokalaemia
 - (c) Slow dissociation constant at receptors
 - (d) Repeated tetanic bursts cause their effect to wear off
57. Which is not true of depolarizing neuromuscular blockers
- (a) Does not cause muscular fasciculation in myasthenic humans
 - (b) No exhibition of tonic response by extraocular muscles
 - (c) Sodium channels are blocked open
 - (d) Antagonized by ether and halothane
58. Effect of nondepolarizing neuromuscular blockers on Children -all are true except
- (a) Hypotension with tubocurarine
 - (b) Hypertension with pancuronium
 - (c) Bradycardia with gallamine
 - (d) Flushing with atracurium
59. Epinephrine exert its effect by
- (a) Direct stimulation of BETA₁ receptors
 - (b) Depression of ALPHA₁ receptors
 - (c) Depression of BETA₂ receptors
 - (d) Stimulation of BETA₁ and BETA₂ but depression of ALPHA₁ receptors
60. Paediatric dose of epinephrine in cardiac arrest is
- (a) 0.1 mg/kg to 0.2 mg/kg IV
 - (b) 0.01 mg/kg IV
 - (c) 0.02 mg/kg IV
 - (d) 0.001 mg/kg IV
61. Clinical effects of dopamine is due to
- (a) Non-selective direct and indirect adrenergic agonist
 - (b) BETA₁ stimulation and ALPHA₁ depression
 - (c) Decrease in myocardial contractility
 - (d) Decrease in peripheral resistance
62. The drug having pure BETA agonist property is
- (a) Epinephrine
 - (b) Dopamine
 - (c) Phentolamine
 - (d) Isoproterenol
63. Favourable effect of dobutamine is
- (a) Decrease in left ventricular filling pressure with increase in coronary blood flow
 - (b) Decrease in coronary blood flow with increase in left ventricular filling Pressure
 - (c) Marked increase in heart rate
 - (d) Decrease in myocardial contractility
64. Which drug is ultra-short acting selective BETA₁ agonist
- (a) Phentolamine
 - (b) Esmolol
 - (c) Propranolol
 - (d) Labetalol
65. Succinylcholine is not metabolized by
- (a) Acetylcholinesterase
 - (b) Pseudocholinesterase
 - (c) Plasma cholinesterase
 - (d) Non-specific cholinesterase

66. The nondepolarizing neuromuscular blocker significantly metabolized by pseudocholinesterase is
(a) Cis-atracurium (b) Pancuronium
(c) Mivacurium (d) Pipecurium
67. What is the first choice vasopressor in septic shock
(a) Noradrenaline (b) Vasopressin
(c) Dobutamine (d) Adrenaline
68. Exchange resin is used in the treatment of
(a) Hypercalcemia (b) Hyperkalaemia
(c) Hybernatremia (d) Hyperphosphatemia
69. Beta agonist is used in hyperkalaemia due to which effect
(a) Protecting cardiomyocytes
(b) Helps in elimination of potassium from the body
(c) Shifts potassium intracellularly
(d) Shifts potassium from intracellular compartment
70. Preferred antifungals for treatment of cryptococcal meningitis in AIDS
(a) Amphotericin B, fluconazole, and flucytosine (b) Flucytosine, itraconazole and ketoconazole
(c) Amphotericin B, itraconazole and ketoconazole (d) Itraconazole, fluconazole, and flucytosine
71. Severe hyperpyrexia and fatal excitatory effect can be seen if MAO inhibitors are used with
(a) Morphine (b) Meperidine
(c) Thiazide diuretics (d) Propofol
72. A decrease in pH of local anaesthetic shifts equilibrium toward the ionized form
(a) Fastening onset of action (b) Delaying onset of action
(c) Easily diffuses across nerve membrane (d) Increases vasoconstrictor effect
73. Local anaesthetics produce anaesthesia by
(a) Inhibiting excitation of nerve endings (b) Stimulation of nerve endings
(c) Increasing conduction in peripheral nerves (d) Activating sodium channels
74. What is the longest acting local anaesthetic?
(a) Ropivacaine (b) Bupivacaine
(c) Lidocaine (d) Prilocaine
75. Metabolites of this local anaesthetic convert haemoglobin to methaemoglobin
(a) Prilocaine (b) Lidocaine
(c) Dibucaine (d) Ropivacaine
76. All are effect of local anaesthetics on cardiovascular system except
(a) Depression of myocardial automaticity (b) Reduced duration of refractory period
(c) Depression of conduction velocity (d) Increase in myocardial contractility
77. Reduction of MAC of volatile anaesthetics by upto 40% is seen with
(a) Bupivacaine (b) Lidocaine
(c) Mepivacaine (d) Etidocaine
78. Hypoxic drive is depressed by
(a) Lidocaine (b) Atracurium besylate
(c) Succinyl choline (d) NSAIDs

79. Repeated dose of which drug is responsible for cauda equina syndrome in continuous spinal anaesthesia
- (a) 5.0% Lidocaine (b) 0.5% Bupivacaine
(c) 0.2% Ropivacaine (d) Morphine
80. Degradation of sevoflurane by soda lime results in the production of
- (a) Compound A (b) Compound B
(c) Compound C (d) Compound D
81. Pin index system is a safety feature adopted in anaesthesia machines to prevent
- (a) Incorrect inhalation agent delivery (b) Incorrect attachment of anaesthesia machine
(c) Incorrect attachment of anaesthesia face mask (d) Incorrect gas cylinder attachment
82. Which factor does not determine the alveolar gas concentration ?
- (a) Fresh gas flow rate (b) Uptake
(c) Ventilation (d) Concentration and second gas effect
83. The relationship between intra-alveolar pressure, surface tension and the radius of an alveolus is described by
- (a) Graham's Law (b) Beer's Law
(c) Bernoulli's Law (d) Laplace's Law
84. Which of the following methods can be used to detect leaks in the low pressure circuit of any contemporary anaesthesia machine?
- (a) Negative pressure leak test (b) Common gas outlet occlusion test
(c) Traditional positive pressure leak test (d) Oxygen flush test
85. According to the ASA 2008 Recommendations, which of the following machine checks should be completed before each case?
- (a) Test scavenging system function
(b) Verify that there are no leaks in the gas supply lines between the flowmeter and the common gas outlet
(c) Verify that patient suction is adequate to clear the airway
(d) Calibrate the oxygen monitor and check the low oxygen alarm
86. An incompetent pressure relief valve will result in which of the following?
- (a) Hypoxia (b) Barotrauma
(c) Hypoventilation (d) A low-circuit pressure signal
87. Which of the following medical gases is matched incorrectly with the standard colour of its holding canister?
- (a) Air : White and Black stripes (b) Oxygen : White
(c) Carbon Dioxide : Orange (d) Nitrous Oxide : Blue
88. Incorrect statement regarding the mechanisms of an AMBU bag is
- (a) It contains a nonbreathing valve, same as the circle system
(b) It is capable of delivery of nearly a 100% O₂ concentration
(c) It allows for positive-pressure ventilation
(d) Patient valve has low resistance to both inspiration and expiration

89. Since fresh gas flow equal to minute ventilation is sufficient to prevent rebreathing, which of the following Mapleson circuit breathing/ventilation systems is the most efficient for spontaneous ventilation of the patient?
- (a) Mapleson A (b) Mapleson B
(c) Mapleson C (d) Mapleson D
90. Which of the following breathing systems is most efficient for a patient with controlled ventilation?
- (a) Mapleson A (b) Mapleson B
(c) Bain Modification (d) Mapleson D
91. The device on anaesthesia machines that most reliably detects delivery of hypoxic gas mixtures is which of the following?
- (a) Fail-safe valve (b) O₂ analyzer
(c) Gas rotamers (d) Disconnection alarm
92. Which of the following valves prevent transfilling between compressed gas cylinders?
- (a) Fail-safe valve (b) Pop-off valve
(c) Check valve (d) Adjustable pressure-limiting valve
93. Gas from an N₂O compressed gas cylinder enters the anaesthesia machine through pressure regulator that reduces the pressure to
- (a) 45 psi (b) 60 psi
(c) 30 psi (d) 15 psi
94. A sevoflurane vaporizer will deliver an accurate concentration of an unknown volatile anaesthetic if the latter shares which property with sevoflurane
- (a) Viscosity (b) Molecular weight
(c) Oil gas partition coefficient (d) Vapor pressure
95. The pin index code of nitrous oxide is
- (a) 2,3 (b) 1,5
(c) 3,5 (d) 2,6
96. Not true about fenestrated tracheostomy tube
- (a) Presence of small hole or multiple holes on shaft of the tube/above the cuff
(b) The holes allow increased airflow through upper airway
(c) Air cannot move through upper airway when cuff is inflated
(d) Vocalization is possible
97. Tracheostomy should be considered to reduce the risk of subglottic stenosis after an endotracheal tube has been in place for
- (a) 5 days after intubation
(b) Inability to wean from ventilatory support within 7 to 10 days
(c) Inability to wean from ventilatory support within 2 to 3 weeks
(d) Inability to wean from ventilatory support within 8 to 10 weeks
98. The laryngeal mask airway is used for securing the airway of a patient in all of the following conditions except
- (a) In a difficult intubation
(b) In cardiopulmonary resuscitation
(c) In a child undergoing an elective/routine eye surgery
(d) In a patient with a large tumour in the oral cavity

99. LMA is used for

- (a) Maintenance of airway
- (b) Facilitating laryngeal surgery
- (c) Prevention of aspiration
- (d) Removing of secretions

100. Fibreoptic intubation is contraindicated in the following patients except

- (a) Who need a surgical airway (those with highly obstructing laryngeal lesions such as large tumours)
- (b) With laryngeal trauma
- (c) With craniofacial trauma who are actively bleeding into the oral cavity and throat
- (d) Trismus

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