1. Ether was first used as an anaesthetic by?

a) Priesly

b) Morton

c) Wells

d) Simpson

Correct Answer - B
Morton REF: http://en.wikipedia.org/wiki/William_T. G_Morton
William Thomas Green Morton (August 9, 1819 - July 15, 1868) was an American dentist who first publicly demonstrated the use of inhaled ether as a surgical anaesthetic in 1846

2. The following increases Intra Ocular pressure:

a) Thiopentone

b) Althesin

c) Ketamine

d) Barbiturate

Correct Answer - C
Ketamine

3. **Composition of soda lime is:**

NaOH - Ca (OH)2 - KOH - Moisture

a) 4% - 90% - 1% - 5%

b) 4% - 80% - 1% - 15%

c) 80% - 10% - 5% - 5%

d) 15% - 80% - 1% - 4%

Correct Answer - B

Soda lime is the more common absorbent and is capable of absorbing up to 23 L of CO2 per 100 g of absorbent.

It consists primarily of calcium hydroxide (80%), along with sodium hydroxide (4%), water, and a small amount of potassium hydroxide (1%).

Commercial soda lime has a water content of 14% to 19%.

CO2 absorbents (eg, soda lime or calcium hydroxide lime) contain hydroxide salts that are capable of neutralizing carbonic acid. Reaction end products include heat (the heat of neutralization), water, and calcium carbonate.

Ref: Butterworth IV J.F., Butterworth IV J.F., Mackey D.C., Wasnick J.D., Mackey D.C., Wasnick J.D. (2013). Chapter 3. Breathing Systems. In J.F. Butterworth IV, J.F. Butterworth IV, D.C. Mackey, J.D. Wasnick, D.C. Mackey, J.D. Wasnick (Eds), *Morgan & Mikhail's Clinical Anesthesiology*, 5e.

4. **All of the following are correct about ketamine, EXCEPT:**

a) It functionally "dissociates" the thalamus

b) It increases arterial blood pressure

c) It is a potent bronchoconstrictor

d) It inhibits polysynaptic reflexes in the spinal cord

Correct Answer - C

Ketamine functionally "dissociates" the thalamus (which relays sensory impulses from the reticular activating system to the cerebral cortex) from the limbic cortex (which is involved with the awareness of sensation).

Ketamine increases arterial blood pressure, heart rate, and cardiac output.

Racemic ketamine is a potent bronchodilator, making it a good induction agent for asthmatic patients.

It inhibits polysynaptic reflexes in the spinal cord as well as excitatory neurotransmitter effects in selected areas of the brain.

Ref: Butterworth IV J.F., Butterworth IV J.F., Mackey D.C., Wasnick J.D., Mackey D.C., Wasnick J.D. (2013). Chapter 9. Intravenous Anesthetics. In J.F. Butterworth IV, J.F. Butterworth IV, D.C. Mackey, J.D. Wasnick, D.C. Mackey, J.D. Wasnick (Eds), *Morgan & Mikhail's Clinical Anesthesiology*, 5e.

5. **A patient undergoing a minor surgical procedure is given lignocaine injection.**

Assertion: Local anaesthetics acts by blocking nerve conduction.

Reason: Small fibers and non myelinated fibers are blocked more easily than large myelinated fibers.

a) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion

b) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion

c) Assertion is true, but Reason is false

d) Assertion is false, but Reason is true

Correct Answer - B

Local anaesthetics blocks nerve conduction by decreasing the entry of sodium ions during upstroke of action potential.
Finally it blocks depolarization to reach threshold potential and conduction block occurs.
Small fibers are more sensitive to local anaesthetics than large fibers and non myelinated fibers are blocked easily than myelinated fibers.

Ref: Essentials of Medical Pharmacology by K D Tripathi, 5th Edition, Pages 321-3

6. The laryngeal mask airway 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

Correct Answer - D

Oropharyngeal abscess or mass is a contraindication to the use of laryngeal mask airway.

Ref: Short Textbook of Anaesthesia By Ajay Yadav, 2nd Edition, Page 36

7. All of the following statements about neuromuscular blockage produced by succinylcholine are true, except:

a) No fade on Train of four stimulation

b) Fade on tetanic stimulation

c) No post tetanic facilitation

d) Train of four ratio > 0.4

Correct Answer - B

Succinylcholine is a depolarizing neuromuscular blocker.
With succinylcholine no fading is observed after train of four or tetanic stimulation.
All four stimulatory responses after TOF stimulation are suppressed to the same extent.

Ref: Neuromuscular Monitoring in Clinical Practice and Research By Thomas Fuchs-Buder, Page 16

8. Mechanism of action of theophylline in Bronchial asthma include all of the following Except ?

a) Phosphodiesterase inhibition

b) Adenosine receptor antagonism

c) Increased histone deacetylation

d) Beta-2 receptor stimulation

Correct Answer - D
Ans. is 'd' i.e., Beta-2 receptor stimulation
Proposed mechanisms of action of theophylline

- *Phosphodiesterase inhibition (Non selective)*
- *Adenosine receptor antagonism (A_1, A_2)*
- *Increased histone Deacetylase activity (↑red efficacy of corticosteroids)*
- *Inhibition of intracellular calcium release*
- *Stimulation of catecholamine release*
- *Inhibition of NF - alpha Beta translocation into the nucleus (nuclear translocation)*
- *Mediator inhibition (Prostaglandins, TNF* alpha)

9. Best to monitor intraoperative myocardial ischemia (infarction) is

a) ECG

b) CVP monitoring

c) Transesophageal echocardiography

d) Invasive intracarotid arterial pressure

Correct Answer - C
C i.e. Transesophageal echocardiography
Tranoesophageal echocardiography provides a real time picture of all 4 cardiac chambers and valves. It can identify any malfunctioning valves in addition to any wall motion abnormalities related to myocardia ischemia. It is very useful during anesthesia. Abnormal motion of ventricular wall detected in this way is a reliable index of myocardial ischemia and may guide drug therapy, can identify if therapy has successfully treated the ischemia or indicate the need for further surgical revascularization
CVP (catherter in central vein) measures right sided filling pressure whereas pulmonary artery catheter measures/monitors left heart filling pressure.
Arterial cannulation measures direct systemic arterial pressure and facilitate sampling of arterial blood for analysis.

10. Which of the following drugs produces dissociative anesthesia

a) Ketamine

b) Propofol

c) Thiopentone

d) Enflurane

Correct Answer - A
A i.e. Ketamine

11. Ketamine can be used in all of the situations except

a) Status asthamaticus

b) For analgesia & sedation

c) Obstetric hemorrhage

d) Ischemic heart disease

Correct Answer - D
D i.e. Ischemic heart disease
Ketamine causes *profound analgesiaQ, disociative anesthesiaQ,* and *emergence psychomimetic hallucinations and delirium Q.*
Ketamine increases *cerebral metabolism, 0_2 consumption, blood flow & intracranial pressure.Q*
Ketamine
* It causes *profound analgesiaQ* and *dissociative anesthesiaQ (i.e.* patient appears conscious e.g. eye opening, swallowing but unable to process or respond to sensory input). Ketamine causes *Dissociative AnesthesiaQ* by acting on cortex and subcortical areas (not on RAS) *l/t* feeling of dissociation from ones own body and surroundings. *Post Operative Delirium and HallucinationQ* is part of this Dissociative phenomenon. Drug of choice for post op. delirium & hallucination *is* Lorazepam.Q
* It is *closest to being a complete anesthetic* since it induces analgesia, amnesia & unconsciousness.
* It is associated with *emergence psychotomimetic side effects (delirium, illusions, hallucination)Q.* It is less common in children and pretreatment with *lorazepam (drug of choice)Q.*

12. Anesthetic agent (s) safe to use in TICP

a) Halothane

b) Thiopentone

c) Ketamine

d) Ether

Correct Answer - B
B i.e. Thiopentone
Anesthetic agents safe to use in raised intracranial pressure (ICP) are *thiopentone, propofol & etomidateQ*

13. All of the following cause myocardial depression except:

a) Halothane

b) Etomidate

c) Thiopentone

d) Ketamine

Correct Answer - B
B i.e. Etomidate
- Etomidate causes *adreno - cortical suppressionQ* by *inhibiting enzymes 11/3 hydroxylase (mainly) & 17 a hydroxylase involved in cortisol and aldosterone (mineralocorticoid) productionQ.* Vit C supplimentation restores cortisol level.
- Etomidate and midazolam *provide cardiovascular stabilityQ.* But *etomidate is most cardiostable agentQ* that causes the least hemodynamic disturbance of any of the *intravenous anesthetic agents. So it is intravenous anesthetic agent of choice for patients with cardiac disease and aneurysm surgeryQ.*
- Direct myocardial depression is caused by *halothane (severe), nitrous oxide (moderate), iso/sevo/des-flurane (mild), thiopental (marked), propofol (dose dependent) and ketamineQ* (but this is masked by cardiotonic sympathetic stimulatory action). *Etomidate > midazolem are most cardiostable agentsQ.*

14. At the end of anaesthesia after discontinuation of nitrous oxide and removal of endotracheal tube, $100^0/0$ oxygen is administered to the patient to prevent:

a) Diffusion Hypoxia

b) Second gas effect

c) Hyperoxia

d) Bronchospasm

Correct Answer - A
A i.e. Diffusion Hypoxia

- *(Ref : Willer 8/e p656, 3401)*
- On discontinuation of N2O administration, nitrous oxide gas can diffuse from blood to the alveoli, diluting O2 in the lung.
  - Produce an effect called “Diffusional hypoxia”.
- To avoid hypoxia, 100% O2, rather than air should be administered when N2O discontinued.

15. Stages of anesthesia were established by

a) Ether

b) N20

c) Halothane

d) Chloroform

Correct Answer - A
A i.e. Ether

16. Hepatotoxic agent *is*

a) Ketamine

b) Ether

c) N20

d) Halothane

Correct Answer - D
D i.e. Halothane

17. Shortest acting local anesthetic agent is

a) Procaine

b) Lidocaine

c) Tetracaine

d) Bupivacaine

Correct Answer - A
A i.e. Procaine

18. Pudendal Nerve Block Involve

a) LiL2L3

b) L2L3L4

c) SiS2S3

d) S2S3S4

Correct Answer - D
D i.e. **S2 S3 S4**

19. Which of the following anesthetic agents have analgesic property:

a) Ketamine

b) Nitrous oxide

c) Thiopentone

d) a and b

Correct Answer - D
A i.e. Ketamine; B i.e. Nitrous oxide

20. Contraindication of bag and mask ventilation are all of the following except:

March 2009

a) Tracheo-esophageal fistula

b) Hiatus hernia

c) Pregnancy

d) Empty stomach

Correct Answer - D

Ans. D: Empty Stomach

Bag-mask ventilation can produce gastric inflation with complications, including regurgitation, aspiration, and pneumonia.

Conditions predisposing to aspiration are:

- Full stomach patients
- Hiatus hernia, pregnancy
- Intestinal obstruction
- Tracheo-esophageal fistula
- Meconium aspiration syndrome

Gastric inflation can elevate the diaphragm, restrict lung movement, and decrease respiratory system compliance

21. Following is true about halothane except?

a) Volatile liquid with sweet odour

b) Sensitises heart to adrenaline

c) Constricts bronchii

d) Causes malignant hyperthermia

Correct Answer - C

Ans. is 'c' i.e., Constricts bronchii

Halothane

- It is a volatile liquid with *sweet odour, nonirritating and noninflammable.*
- It is a *potent anaesthetic with poor analgesic and muscle relaxant properties.*
- *Halothane causes direct depression of myocardial contractility by reducing intracellular Ca.*
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- *It tends to sensitize the heart to arrhythmogenic action of adrenaline* → contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi → inhalation agent of choice in asthmatics (intravaneous anaesthetic of choice in asthmatics is ketamine).
- It is a *hepatotoxic drug* and can also cause *malignant hyperthermia* (Succinylcholine accentuate it).
- Recovery is smooth and reasonably quick.
- It causes *postanaesthetic shivering and chills.*
- It inhibits intestinal and uterine contractions → agent of choice for assisting external or internal version during late pregnancy.

- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

22. Midazolam causes all except:

a) Anterograde amnesia

b) Retrograde amnesia

c) Causes tachyphylaxis during high dose infusions

d) Decreased cardiovascular effects as compared to propofol

Correct Answer - B
Ans. b. Retrograde amnesia
At the time of peak concentration in plasma, hypnotic doses of benzodiazepines (midazolam) can be expected to cause varying degrees of lightheadedness, lassitude, increased reaction time, motor incoordination, impairment of mental and motor functions, confusion, and anterograde amnesia."

Midazolam:

- It causes anterograde amnesia[Q]
- Tolerance and tachyphylaxis may occur, particularly with longer-term infusions[Q](Shafer A. Complications of sedation with midazolam in the intensive care unit and a comparison with other sedative regimens. Crit Care Med. 1998;26(5): 947-56)
- Benzodiazepine withdrawal syndrome has also been associated with high dose/ long-term midazolam infusions[Q]
- Compared with propofol infusions, midazolam infusions have been associated with a decreased occurrence of hypotension° but a more variable time course for recovery of function after the cessation of the infusion.

23. Which of the following inhalational agent sensitizes myocardium to catecholamine

a) Sevoflurane

b) Isoflurane

c) Ether

d) Halothane

Correct Answer - D
Ans. is 'd' i.e., Halothane

- Some inhalational agent sensitize the heart to adrenaline —> Arrhythmias can occur —> Therefore these agents are contraindicated in Pheochromocytoma and along with adrenaline.
- Halothane has maximum propensity .
- Other agents sensitizing the heart to adrenaline are Trilene, Cyclopropane, Chloroform, Enflurane

24. Gas used in rapid airbag inflation

a) Sodium azide

b) Nitrocellulose

c) Mercuric nitrate

d) Potassium nitrate

Correct Answer - A
Ans. is 'a' i.e., Sodium azide
Chemistry of air bags

- The inclusion of air bags in the modern automobiles has led to decrease in the automobile injures.
- The term air bag is a misnomer as air is not involved in the inflation process.
- Rather an air bag inflates rapidly (in about 30ms) due to explosive production of N2 gas. Sodium azide is used which is rapidly decomposed to Nitrogen gas.

25. Which of the following is not primarily used to anesthetize mucosa ?

a) Benzocaine

b) Lidocaine

c) Bupivacain

d) Tetracaine

Correct Answer - C
Ans. is 'c' i.e., Bupivacaine

26. Post spinal headache lasts for ?

a) 10 min

b) I hrs

c) 10 days

d) 1 week

Correct Answer - C
Ans. is 'c' i.e., 10 days

- Post dural puncture headache is due to CSF leak. Typical location is bifrontal or occipital.
- Headache gets worsen on sitting or upright posture and is relieved by lying down position and abdominal pressure —> The hallmark of postdural puncture headache i.e., association with body position.
- The onset of headache is usually 12-72 hours following the procedure, however, it may be seen almost immediately. In most cases it lasts for 7-10 days.
- PDPH is believed to result from leakage of CSF from a dural defect and decreased ICT. Loss of CSF at a rate faster that it can be produced causes traction on structure supporting the brain, particularly dura and tentorium. Traction on cranial nerve (particularly 6th nerve) produces diplopia.
- Factors that increase the incidence of PDPH are young age, female sex, Pregnancy, large bore needle and multiple punctures.
- Use of small bore needle can prevent PDPH .
- Intially conservative treatment is given which includes analgesics (NSAIDs), oral or i.v., fluids, Sumatriptan, cosyntropin, caffeine and recumbent position.
- If conservative treatment fails, epidural blood patch can be used. It involves injecting 15-20 ml of autologus blood into the epidural

space which stop leakage of CSF by coagulation and mass effect

27. Laryngeal mask airway not used in ?

a) Baby weighing < 1500gms

b) Pregnant Patients

c) Ocular Surgeries

d) Difficult airway

Correct Answer - B

Ans. is `b' i.e., Pregnant Patients

Indications of LMA

1. As an alternative to intubation where difficult intubation is anticipated (difficult airway).
2. To facilitate endo-tracheal intubation in a patient with difficult airways.
3. Situations involving a difficult mask fit.
4. Securing airway (as cardiopulmonary resuscitation) in emergency where intubation and mask ventilation is not possible.
5. For minor surgeries (short surgeries), where anaesthetist wants to avoid intubation.
6. As a conduit for bronchoscopes, small size tubes, gum elastic bougies.
7. For extra and intra-ocular surgeries including retinopathy surgery in premature infants —) LMA is particularly useful in ophthalmic surgery as problems created by other two airways are eliminated : -
8. Face mask creates problem in surgical field access due to its size (LMA provides a better access).
9. Endotracheal intubation may cause raised IOT (LMA has no effect).

Contraindications of LMA

1. Conditions with high risk of aspiration i.e., full stomach patients, hiatus hernia, pregnancy.

2. Oropharyngeal abscess or mass (tumor).
3. Massive thoracic injury
4. Massive maxillofacial trauma

28. Local anaesthetic causing methemoglobinuria is?

a) Dibucaine

b) Chlorprocaine

c) Procaine

d) Benzocaine

Correct Answer - D
Ans. is 'd' i.e., Benzocaine
Important facts about LAs

- Chlorprocaine is the shortest acting LA.
- Dibucaine is the longest acting, most potent and most toxic LA.
- Procaine & chlorprocaine are least potent LAs.
- Bupivacaine is the most cardiotoxic LA (Ropivacaine is a newer bupivacaine congener with less cardiotoxicity).
- Levobupivacaine (The S (-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure.
- Prilocaine and Benzocaine can cause Methaemoglobinemia
- Lignocaine is the most commonly used LA.
- Bupivacaine has the highest local tissue irritancy.
- Chlorprocaine is contraindicated in spinal anaesthesia as it can cause paraplegia due to presence of neurotoxic preservative sodium metabisulphite.
- Procaine is the LA of choice in malignant hyperthermia

29. Which of the following are features of pulmonary oxygen toxicity?

a) Increased capillary endothelial permeability

b) Decreased mucociliary transport in airways

c) Inhibition of phagocytosis function of alveolar macrophages

d) All the above

Correct Answer - D

Ans. is 'd' i.e., All the above

1. Prolonged inhalation of high concentration of 0, is known to damage the lungs.
2. Pulmonary toxicity of 0, is related to the oxygen tension in alveoli.

The pulmonary oxygen toxicity has the following features

- Increased capillary endothelial permeability causing accumulation of fluid in the interstitial space.
- Depression of mucociliary transport function of airway
- Inhibition of phagocytosis of alveolar macrophages
- Changes in the surfactant activity and its production.

30. Which of the following systems can be used to produce PEEP?

a) Spring system

b) Ball valve system

c) Pneumatic system

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
anesthesia by Hartigan p. 179] <u>PEEP Valve</u>

- A PEEP Valve is a device which maintains the airway at end exhalation.
- Spring valve system is the simplest PEEP valve system. Other valve systems for PEEP are electronic, magnetic, pneumatic and ball vale.
- PEEP devices may be integrated into ventilator or may be separate devices that are attached directly into anesthesia circuit, CPAP device or manual resuscitation bag.

31. Which of the following is contraindicated in head injury?

a) Ketamine

b) Halothane

c) N,0

d) Propofol

Correct Answer - A
Ans. is 'a' i.e., Ketamine

32. Percentage of tetracaine used in eye surgery?

a) 0.5%

b) 1%

c) 2%

d) 4%

Correct Answer - A
Ans. is 'a' i.e., 0.5%

- Cataract surgery can be performed using topical anaesthesia alone. Tetracaine 0.5% and Lidocaine 4% can be used.
- Advantages of this method is that it avoids the potential complications with retorbulbar and peribulbar injections. Dsadvantages include the potential for eye movement during surgery, increased patient anxiety, and discomfort from the microscope light

33. What is the pressure at which oxygen is stored?

a) 75 psi

b) 1600 psi

c) 760 psi

d) 2200 psi

Correct Answer - D
Ans. is 'd' i.e., 2200 psi

34. True about post dural headache is all except:?

a) Orienting beveled edge needle parallel to long axis prevents it

b) Thin bore needle prevents it

c) It is more common in males

d) Timing of ambulation has no effect over its incidence

Correct Answer - C

Ans. is `c' i.e., It is more common in males

FACTORS THAT INCREASE THE INCIDENCE OF HEADACHE AFTER SPINAL PUNCTURE

- Age : Younger, more frequent.
- Sex : Females > males
- Needle size : Larger > smaller
- Needle bevel : Less when the needle bevel is placed in the long axis of the neuraxis
- Pregnancy : More when pregnant
- Dural punctures : More with multiple punctures

FACTORS THAT DO NOT INCREASE THE INCIDENCE OF HEADACHE AFTER SPINAL PUNCTURE

- Insertion and use of catheters for continuous spinal anaesthesia
- Timing of ambulation

About option a

- Orienting a needle bevel parallel with the axis of the spine, such that the longitudinal fibres of the dura would more likely be separated than cut, results in a lower incidence of postspinal puncture headache.

35. Ketamine contraindicated in all except?

a) Head injury

b) Hypertension

c) Asthma

d) Glaucoma

Correct Answer - C
Ans. is `c' i.e., Asthma

- Ketamine increases cerebral blood flow, metabolism, oxygen consumption and intracranial tension, unlike thiopentone, propofol&etomidate, which have cerebroprotectiveeffect, therefore ketamine is contraindicated in head injury, intracranial space occupying lesions and for neuroanaesthesia.
- Cerebrovascular responsiveness to CO_2 is preserved, and reducing the arterial CO_2 tension by hyperventilation attenuates the ketamine induced rise in ICT.
- Ketamine has direct myocardial depressant (negative ionotropic) & vasodilator effect. However, ketamine also has
- indirect sympathomimetic effect. Indirect sympathomimetic effect predominates over direct myocardial depressant &vasodilator effect; usual response is increased BP, cardiac output and heart rate- Cardiac 02 demand is increased.
- Ketamine is contraindicated in aortic aneurysm, hypertensive and ischemic heart disease. Ketamine also sensitizes
- the heart to adrenaline - arrhythmias may occur.
- As ketamine cause sympathetic stimulation, it is the intravenous anaesthetic of choice in patients with shock and hypovolemia.
- Ketamine increases intra-ocular tension - Contraindicated in glaucoma & open eye surgery.

- It is a potent bronchodilator and relieves bronchospasm - Intravenous anesthetic agent of choice in asthmatic (inhalational anaesthetic agent of choice in asthmatics is halothane)
- It increases uterine tone and intensity of uterine contraction - agent of choice in patients with obstetric haemorrhage and flaccid uterus.
- Injection of ketamine is not painful (all other i.v. inducing agents cause pain on injection).

36. In Bier's block aesthetic agent given by which route?

a) Intravenous

b) Peribulbar region

c) Retrobulbar area

d) Dermal

Correct Answer - A
Ans. is 'a' i.e., Intravenous

- Intravenous regional anaesthesia (IVRA) is used most often for surgery of the forearm and hand, but can also be used for distal leg and foot.
- First IV cannula is inserted usually in the dorsum of hand.
- Then tourniquet cuff is applied to proximal arm.
- Limb is elevated and exsanguinated with the help of an elastic bandage (Esmarch).
- Now tourniquet cuff is inflated above systolic pressure (so that no blood can enter in that limb and the limb remains exsanguinated).
- Now the local anaesthetic solution is slowly injected into cannula.
- The veins are filled with only local anaesthetic as there is no blood —> local anaesthetic can not be drained out form upper limb and can not enter in systemic circulation because of inflated cuff in proximal arm.
- The arm is anaesthetized in 6-8 minutes.
- *Lidocaine without adrenaline is the DOC for this technique.- Goodman & Gilman IIth/e p. 381*
- A few clinician prefers prilocaine over lidocaine because of its higher therapeutic index - least toxic LA.
- Tornique cuff deflation, premature release or failure of torniquet can

cause release of LA into circulation and toxicity
- may occur —> So, cardiotoxic LAs like bupivacaine and etidocaine are contraindicated for Bier's block.

37. What is the next step in management in managing a child with difficult intubation with 4 failed attempts at intubation?

a) Use LMA

b) Abandon the procedure

c) Try ET tube intibation again

d) Cricothyrotomy

Correct Answer - A
Ans. is 'a' i.e., Use LMA

38. Following group of drugs is not the first line in the management of chronic pain?

a) Opioids

b) Antiepileptics

c) Serotonergic drugs

d) Dopamine antagonist

Correct Answer - D
Ans. is 'd' i.e., Dopamine antagonist

39. Anaesthetic of choice for day care srgery is?

a) Thiopentone

b) Nitrous oxide

c) Propofol

d) Halothane

Correct Answer - C
Ans. is 'c' i.e., Propofol

40. Macintosh indicator is used for ?

a) To assess degree of NM blockade

b) Localization of extradural space

c) To assess level of GA

d) To monitor respiratory depression

Correct Answer - B

Ans. is 'b' i.e., Localization of extradural space

- Various methods have been used to locate the epidural (extra dural space), most of which rely on subatmospheric pressure.

These are :-

- Loss of resistance to air or saline (most common technique).
- Gutierrez's method : A hanging drop of saline on the hub of needle is drawn in as the epidural space is entered (more reliable in thorocic than lumbar region).
- Odom 's indicator : A fine-bore glass tube filled with saline and a bubble that moves in response to a drop in pressure.
- Macintosh's indicator : A small rubber balloon filled with air connected to an adaptor causing it to deflate on entering the epidural space.
- Macintosh's spring-loaded needle.
- Ultrasonic localization.
- Oxford epidular space detector.

41. Atracurium is excreted by

a) Renal excretion

b) Hepatic elimination

c) Nonenzymatic degradation

d) All of the above

Correct Answer - C
Ans. is 'c' i.e., Nonenzymatic degradation

- The unique feature of atracurium is inactivation in plasma by spontaneous nonenzymatic degradation (Hofmann elimination) in addition to that by alkaline ester hydrolysis.
- Consequently its duration of action is not altered in patients with hepatic / renal insufficiency or hypodynamic circulation Preferred muscle relaxant for such patients as well as for neonates and the elderly.o Atracurium is metabolised to laudanosine that is responsible for seizures.
- It can cause histamine release Hypotension & bronchoconstriction.

42. Local anaesthetic with prolonged action ?

a) Procaine

b) Cocaine

c) Lidocaine

d) Dibucaine

Correct Answer - D
Ans. is 'd' i.e., Dibuca

- Dibucaine is the longest acting local anaesthetic
- Chlorprocaine is the shortest acting local anaesthetic
- Decreasing order of duration : - Dibucaine > Bupivacine = Tetracaine = Ropivacaine = Etidocaine > Prilocaine = Lignocaine = Mepivacaine = Cocaine > Procaine > Chlorprocaine .

43. Drug used to prolong action of LA in Hypertensive pts?

a) Clonidine

b) Felypressin

c) Dexmeditomidate

d) Noradrenalin

Correct Answer - B
Ans. is 'b'.e., Felypressin

44. Which among the following is a depolarising muscle relaxant?

a) Decamethonium

b) D tubocurarine

c) Doxacurium

d) Atracurium

Correct Answer - A
Ans. is 'a' i.e., Decamethonium

- Morgan 4th/e p. 214]
- See explanation-4 of session-3.

45. Which of the following is fastest acting inhalational anaesthetic agent?

a) Halothane

b) Desflurane

c) Sevoflurane

d) Isoflurane

Correct Answer - B
Ans. is 'b' i.e., Desflurane
Blood : Gas partition coefficient (B:G cofflcient)

- It is the measure of solubility of the agent in the blood. Agent with low blood solubility (low B : G coefficient) will have high concentration in alveolar air as it will diffuse less through the alveolar capillary membrane because of low blood solubility. Since alveolar concentration determines the induction and recovery, induction & recovery will be fast with agent with less B : G partition coefficient; and induction & recovery will be slower with agents with high B : G partition coefficient.
- Desflurane has minimum B : G partition coefficient (least blood solubility) Has Fastest onset and recovery. o Methoxyflurane has maximum B : G partition coefficient (Maximum blood solubility) -4 Has slowest onset & recovery.
- Speed of onset & recovery in decreasing order (Increasing order of B: G partition coefficient and blood solubility):?
- Desflurane (0.42) > Cyclopropane (0.44) > N_2O (0.47) > Sevoflurane (0.69)> Isoflurane (1.38) > Enflurane (1.8) > Halothane (2.4) > Chloroform (8) > Trilene (9) > Ether (12) > Methoxyflurane (15)

46. Current mode of analgesia best for intrapartum pain relief?

a) Epidural analgesia

b) Spinal anaesthesia

c) Inhalational

d) Local analgesia

Correct Answer - A
Ans. is 'a' i.e., Epidural Analgesia

- Continuous lumbar epidural analgesia is the procedure of choice for pain relief during normal labour and vaginal delivery (Intrapartum pain).

47. The most appropriate circuit for ventilating a spontaneously breathing infant during anaesthesia is?

a) jackson Rees modification of Ayre's T piece

b) Mapleson A or Magill's circuit

c) Mapleson C or Waters to and fro canister

d) Bains circuit

Correct Answer - A
Ans. is 'a' i.e., Jackson Rees modification

48. Characteristic EEC pattern seen in surgical tolerance stage of anesthesia is?

a) Alpha

b) Beta

c) Delta

d) Theta

Correct Answer - C
Ans. is 'c' i.e., Delta

49. Supraclavicular block is used for surgery of ?

a) Shoulder

b) Forearm

c) Arm

d) All

Correct Answer - D
Ans. is D.`(A) Shoulder (B) Forearm (C) Arm

50. All of the following about thiopentone are true except?

a) It decreases ICT

b) It has anticonvulsant action

c) IV injection is painless

d) It can cause reflex tachycardia

Correct Answer - C
Ans. is 'c' i.e., IV injection is painless

51. Thiopentone is not used in?

a) Induction of anesthesia

b) Medically induced coma

c) As truth serum

d) As antidepressant

Correct Answer - D
Ans. is 'd' i.e., As antidepressant

52. IV dose of 1: 10000 concentration of epinephrine in pre term baby is?

a) 0.1m1

b) 0.2 ml

c) 0.3 ml

d) 0.4 ml

Correct Answer - B
Ans. is 'b' i.e., 0-2 ml
Epinephrine

- The IV dose of 1: 10,000 concentration is 0.1m1/Kg. Thus it is about 0.5ml for term baby and 0·2 ml for pre term baby.
- Endotracheal tube dosing is 1m1/ Kg. thus it is about 3m1 for term baby and 1 ml for preterm.

53. Longest acting among muscle relaxant is?

a) Doxacurium

b) Rocuronium

c) Vecuronium

d) Atracurium

Correct Answer - A
Ans. is 'a' i.e., Doxacurium

- Among the given options, only doxacurium is long acting.
- See explanation- 4 of session- 3.

54. Warfarin to be stopped_____ days before surgery?

a) 2 to 3 days

b) 4 to 5 days

c) 6 to 7 days

d) 8 to 9 days

Correct Answer - B
Ans. is 'b' i.e., 4 to 5 days

- Warfarin may increase peri- operative bleeding, except for minor procedures such as cataract surgery without bulbar blocks. No consensus exists on the optimal perioperative management of patients receiving warfarin.
- The usual recommendation is to withhold warfarin starting 4 to 5 days preoperatively (if the INR is between 2·0 and 3·0) to allow the INR to decrease to less than 1·5, which *is a* level considered safe for surgical procedures and neuraxial blockade.
- If the INR is greater than 3·0, it is usually necessary to withhold warfarin longer than 4 to 5 days.
- If the INR is measured the day before the surgical procedure and remains higher than 1·8, a small dose of vitamin K (1 to 5 mg administrated orally or subcutaneously) can reverse anticoagulation.
- Vitamin K has an effect within 6 to 10 hours after oral or subcutaneous administration (more predictable with oral administration), and it peaks within 24 hours to 48 hours. Administration of higher doses may lead to warfarin resistance when therapy is initiated again.

55. False about local anesthetics

a) Prilocaine is less toxic than lignocaine

b) Lignocaine is used as an antiarrhythmic

c) Mixture of ligno + prilocaine is known as eutectic

d) Lidocaine is shorter acting than bupivacaine

Correct Answer - A
Ans. is 'a' i.e., Prilocaine is less toxic than lignocaine

56. Most common complication of coeliac plexus block ?

a) Hypotension

b) Parasthesias

c) Diarrhea

d) Pneumothorax

Correct Answer - A
Ans. is 'a' i.e., Hypotension
Celiac plexus block

- The celiac plexus is situated retroperitoneally in the upper abdomen. It is at the level of T_{12} and L, vertebrae anterior to the crura of the diaphragm. It contains visceral afferent and efferent fibers divided from T_5 to T_1, by means of greater, lesser and least splanchnic nerves. Celiac plexus innervates most of the abdominal viscera, therefore this procedure blocks the nerves which come from the pancreas, liver, gall bladder, stomach, intestine, spleen, kidney and adrenal glands.
- A celiac plexus block can be combined with an intercostal block to provide anesthesia for intra-abdominal surgery.
- Because celiac plexus block results in blockade of the autonomic nervous system, this block may help to reduce stress and endocrine responses to surgery. For the same reason, the most common complication of celiac plexus block is postural hypotenstion because of blockade of lumbar sympathetic chain leading to upper abdominal vessel dilation and venous pooling.
- Celiac plexus block can be done by following three approaches : - Retrocrural (classic) approach, anterocrural approach and

splanchnic nerve block.

- Celiac plexus block is given to treat intractable pain in chronic pancreatitis, gastric & pancreatic malignancies.
- It can be combined with an intercostal block to provide anesthesia for intra-abdomival surgery.
- Postural hypotension is the Most common complication of classic retrocrural and splanchnic nerve block,
- Where as most common complication of Anterocrural approach is transient diarrhoea

57. True about malignant hyperthermia is all except

a) Most common cause is Sch

b) Dantrolene is the drug of choice

c) End tidal CO, is increased

d) Bradycardia occurs

Correct Answer - D
Ans. is 'd' i.e., Bradycardia

58. Elderly patient with fracture right hip anesthetic of choice

a) Spinal/ epidural

b) General

c) Local infiltration

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Spinal/epidural

59. Which is a safe muscle relaxant in renal failure ?

a) Cisatracurium

b) Rocuronum

c) Vecuronium

d) Succinylcholine

Correct Answer - A
Ans. is 'a' i.e., Cisatracurium

- The unique feature of atracurium and cisatracurium is inactivation in plasma by spontaneous nonenzymatic degradation (Hofman elimination) in addition to that by alkaline ester hydrolysis.
- Therefore both of these do not require hepatic or renal routes for elimination therefore can be used safely in hepatic and renal failure.
- Moreover, cisatracurium does not provoke histamine release, therefore it is preferred over atracurium.

60. Onset of post spinal headache is usually at hours after spinal anesthesia

a) 0 - 6

b) 6-12

c) 12 - 72

d) 72 - 96

Correct Answer - C
Ans. is 'c' i.e., 12 - 72

61. DISS is used for ?

a) Correct application of cylinder to anaesthesia machine

b) To provide analgesia

c) To monitor BP

d) To monitor CVP

Correct Answer - A
Ans. is `a' i.e., Correct application of cylinder to anaesthesia machine

62. Drugs used for day care surgery are all except?

a) Propofol

b) Sevoflurane

c) Doxacurium

d) Desflurane

Correct Answer - C
Ans. is 'c' i.e., Doxacurium

63. Shortest acting non depolarizing muscle relaxant is?

a) Mivacurium

b) Doxacuronium

c) Pipecurium

d) Vecuronium

Correct Answer - A
Ans. is 'a' i.e., Mivacurium

- Suxamethonium (succinylcholine) is the shortest acting skeletal muscle relaxant. o Mivacurium is the shortest acting nondepolarizing skeletal muscle relaxant.

64. Henrys law states that?

a) At a constant temperature gas dissolves in solution in proportion to its partial pressure

b) At a constant Pressure gas dissolves in solution in proportion to its temperature

c) At a constant temperature gas dissolves in solution in proportion to its fat solubility

d) At a constant pressure gas dissolves in solution in proportion to its fat solubility

Correct Answer - A
Ans. is 'a' i.e., At a constant temperature gas dissolves in so lution in proportion to *its* partial pressure

65. Propofol infusion syndrome all except?

a) Occurs with infusion of propofol for 48 hours or longer

b) Occurs in critically ill patients

c) Features are nausea and vomiting

d) Features are cardiomyopathy, hepatomegaly

Correct Answer - C
Ans. is 'c' i.e., Features are nausea and vomiting
Propofol infusion syndrome

- A lethal syndrome, associated with infusion of propofol for 48 hours or longer.
- Occurs in children and critically ill.
- Occurs as a result of failure of free fatty acid metabolism and failure of the mitochondrial respiratory chain.
- Features are-cardiomyopathy with acute cardiac failure, metabolic acidosis, skeletal myopathy, hyperkalemia, hepatomegaly and lipemia.

66. Hyperbaric oxygen is not useful in?

a) Anemia

b) Vertigo

c) Gas gangrene

d) Compartment Syndrome

Correct Answer - B
Ans. is 'b' i.e., Vertigo

67. Treatment in post operative shivering?

a) Pethidine

b) Piritramide

c) Methadone

d) Pentazocine

Correct Answer - A
Ans. is 'a' i.e., Pethidine
Post-anaesthesia shivering (PAS)

- Post anaesthesia (post operative) shivering occurs in 40% of patients recovering from general anaesthesia.
- Some time it is preceded by central hypothermia and peripheral vasoconstriction, indicating that it is a thermoregulatory mechanism
- Pethidine is most effective drug for treatment of PAS.
- Other drugs used are --clonidine, doxapram, ketanserin, alfentonil, butorphanol, chlorpromazine.

68. Standard method to differentiate between endotracheal and esophageal intubation is?

a) End tidal CO2

b) Chest X-rays

c) Auscultation

d) Partial pressure of 02

Correct Answer - A
Ans. is 'a' i.e., End tidal CO2

69. Anesthetic agent/s which have tocolytic effect are?

a) Halothane

b) Enflurane

c) Isoflurane

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above

- Halothane, enflurane and isoflurane produce a dose dependent decrease in uterine tone (tocolysis).
- Studies of isoflurane demonstrate that halogenated compounds reduce both the frequency of uterinecontractions and the interval between them.

70. Following are hepatotoxic anesthetic agents except?

a) Halothane

b) Chloroform

c) Ether

d) Propofol

Correct Answer - D
Ans. is `d' i.e., Propofol
Zimmermann p. 458]
Following are the groups of hepatotoxic anesthetic agents:

- Group I : Drugs with well known hepatotoxic potential and containing Chlorine or bromine. Eg: chloroform.
- Group II : Drugs which contain fluorine Eg: halothane, methoxyflurane.
- Desflurane, enflurane, sevoflurane, isoflurane, nitrous oxide and carbon tetrachloride are also linked with hepatotoxicity.

71. Action of which anesthetic agent is through NMDA receptors?

a) Xenon

b) NO

c) Succinylcholine

d) Etomidate

Correct Answer - A
Ans. is 'a' i.e., Xenon
Xenon

- It exerts anaesthetic action by non competitive blockade of NMDA receptors.
- Xenon has been used as a general anesthetic.
- Xenon interacts with many different receptors and ion channels and like many theoretically

72. All of the following are Nondepolarising muscular blockers except

a) Pancuranium

b) Dexacurium

c) D-Tubocurarine

d) Succinylcholine

Correct Answer - D
Ans. is 'd' i.e., Succinylcholine

73. In epidural anaesthesia drug is injected ?

a) Outside the dura

b) Inside the duramater

c) Inside arachnoidmater

d) Inside piamater

Correct Answer - A
Ans. is 'a' i.e., Outside the dura

74. Celiac plexus block all the following is true except ?

a) Relieved pain from gastric malignancy

b) Cause hypotention

c) Can be used to provide anesthesia for intra abdominal surgery

d) Can be given only by retrocrural (classic) approach

Correct Answer - D
Ans. is 'd' i.e., Can be given only by retrocrural (classic) approach
Celiac plexus block can be done by following three approaches :

- Retrocrural (classic) approach, anterocrural approach and splanchnic nerve block.
- See explanation- 4 of session- 8 of Anaesthesia of All India 2014-15 pattern of this book.

75. Best uterine relaxation is seen with ?

a) Chloroform

b) Nitrous oxide

c) Ether

d) Halothane

Correct Answer - D
Ans. 'd' i.e., Halothane

- Halogenated inhalational anaesthetic agents like halothane are powerful tocolytic agents. Halothane is anaesthetic of choice for internal version and manual removal of placenta.

76. Dibucain number refers to ?

a) Ach cholinestrase activity derangement

b) Potency of muscle relaxants

c) Potency of general anaesthetics

d) None

Correct Answer - A
Ans. is 'a' i.e., Ach chlinestrase activity derangement

- Dibucain number : Dibucain (a local anaesthetic) inhibits 80% of normal pseudocholinesterase and 20% of atypical (non-functional) pseudocholinesterase. Therefore normal dibucain number is 70-80%. Dibucain number is used to measure the activity of atypical pseudocholinesterase.

77. Percentage of lidocaine in Eutectic mixture -

a) 1%

b) 2.5%

c) 5%

d) 10%

Correct Answer - B
Ans. is 'b' i.e., 2-5%
Eutectic mixture of local Anaesthetics

- This is unique topical preparation which can anaesthetise intact skin.
- It is a mixture of 2.5% lidocaine and 2.5 prilocaine.
- It acts slowly and the cream must held in contact with skin for at least 1 hour.
- EMLA is used : to make venepuncture painless especially in children, and for procedure like skin grafting & circumcision.
- As systemic absorption of prilocaine can cause methemoglobinemia, EMLA should not be used on mucocutaneous membrane or in very small child.

78. Long acting local anaesthetic ?

a) Procaine

b) Lignocaine

c) Prilocaine

d) Dibucaine

Correct Answer - D
Ans. is 'd' i.e., Dibucaine

79. Hepatotoxic inhalational agent ?

a) Halothane

b) Enflurane

c) Desflurane

d) Sevoflurane

Correct Answer - A
Ans. is 'a' i.e., Halothane

- All inhalational agent cause mild hepatotoxicity by decreasing hepatic blood flow.
- Isoflurane is the agent of choice in liver disease as it has least effect on Hepatic blood flow.
- Direct hepatotoxicity (Hepatitis,Hepatic necrosis) is caused by :- Halothane, Chloroform, trilene, methoxyflurane

80. A patient after giving inhalational anaestheia developed fulminant hepatitis, patient was exposed to same drug previously. Which is the drug?

a) Halothane

b) N20

c) Enflurane

d) Isoflurane

Correct Answer - A
Ans. is 'a' i.e., Halothane
Halothane

- It is a volatile liquid with sweet odour, nonirritating and noninflammable.
- It is a potent anaesthetic with poor analgesic and muscle relaxant properties.
- Halothane causes direct depression of myocardial contractility by reducing intracellular Ca+2.
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- It tends to sensitize the heart to arrhythmogenic action of adrenaline —* contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi —> inhalation agent of choice in asthmatics (intravaneous anaesthetic of choice in asthmatics is ketamine).
- It is a hepatotoxic drug and can also cause malignant hyperthermia (Succinylcholine accentuate it).

- Recovery is smooth and reasonably quick.
- It causes postanaesthetic shivering and chills.
- It inhibits intestinal and uterine contractions —> agent of choice for assisting external or internal version during late pregnancy.
- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

81. Least MAC is of which inhalational agent?

a) Xenon

b) Halothane

c) Sevoflurane

d) Isoflurane

Correct Answer - A
Ans. is 'a' i.e., Xenon

Agent	MAC (%)
Ether	1.9
Halothane	0.75
Enflurane	1.68
Isoflurane	1.2
Desflurane	*6.0*
Sevoflurane	2.0
Nitrous oxide	105

"Xenon has MAC of 71%" — Morgan
Methoxyflurone (MAC = 0.16%) > Trilene (0.2%) > Halothane (0.74%) > Chloroform (0.8%) > Isoflurane (1.15%)> Entlurane (1.68%) > Ether (1.92%) > Sevoflurane (2.0%) > Desflurane (6,0%) > Cyclopropane (9.2%) > N20 (104%).

82. In pseudocholinesterase deficiency, drug to be used cautiously is-

a) Barbiturate

b) Succinylcholine

c) Halothane

d) Gallamine

Correct Answer - B
Ans. is 'b' i.e., Succinylcholine
Cholinesterase
At cholinergic nerve endings, in erythrocytes, and gray matter there is an enzyme that specfically destroys acetylcholine, true cholinesterase or acetylcholinestrase.
In various tissues, especially in plasma, liver, white matter & intestine, there are other esterases which are not specific for acetylcholine but which also destroy other esters, these are called nonspecific or pseudocholinesterase or butyrylcholinesterase.
The drugs hydrolyzed by pseudocholinesterase are (Miller 5th/e p. 419, 420)
1. Succinylcholine
2. Cocaine
3. Mivacurium
4. Bambuteral
5. Remifentanil
6. Procaine

Pseudocholinesterase is more sensitive to organophosphate anticholinesterase, while true acetylcholinesterase is more sensitive to carbamate anticholinesterase (Physostigmine).
Condions where pseudocholinesterase level decreases.

1. *Pregnancy*
2. Malnutrition
3. CRF
4. Burns
5. Collegen vascular disease
6. Hypothyroidism
7. Malignancy
8. Liver failure

83. Blood : Gas partition coefficient is a measure of ?

a) Potency of anaesthetic agent

b) Speed of induction and recovery

c) Lipid solubility of agent

d) None

Correct Answer - B
Ans. is 'b' i.e., Speed of induction and recovery

- Minimum alveolar concentration (MAC) —> Measure of potency.
- Blood : Gas partition coefficient Blood solubility of anaesthetic agent and determines the speed of induction & recovery.
- Oil : Gas pa*rtition coefficient* -4 Lipid solubility of anaesthetic agent and is related to potency of anaesthetic agent.

84. Inhalational agent of choice for neurosurgery ?

a) Halothane

b) Enflurane

c) Isoflurane

d) N20

Correct Answer - C
Ans. is 'c' i.e., Isoflurane
Anaesthetic agents of choice for vaous conditions Day care :

Ischemic heart disease :	
Congenital heart disease	Propofol
Left to right shunt :	Etomidate
Right to left shunt :	Isoflurane
CHF :	Ketamine
Shock	Ketamine
To produce delibrate hypotenion	Isoflurane
Epilepsy :	Thiopentone
For electroconvulsive therapy :	Methohexitone
Thyrotoxicosis :	Thiopentone
Cardiac surgery :	Isoflurane
Neurosurgery :	Isoflurane

85. Regarding propofol, which one of the following is false?

a) It is used as an intravenous induction agent

b) It causes severe vomiting

c) It is painful on injecting intravenously

d) It has no muscle relaxant property

Correct Answer - B

Ans. is 'b' i.e., It causes severe vomiting

Propofol

- Propofol is a milky white powder that is preservative free; therefore, it must be used within 6 hours. It is an oil based preparation, therefore injection is painful.
- Propofol is the most frequently used intravenous anaesthetic today. —Miller 6thie - 318
- It can be used for both induction as well as maintenace.
- It does not possess anticonvulsive action (unlike thiopentone).
- It causes fall in BP and bradycardia.
- Like thiopental it does not possess muscle relaxant action.
- Propofol possess significant antiemetic and antipruritic action.→Miller 6th/e - 324
- Propofol decreases polymorphonuclear leukocyte chemotoxis but not aherence, phagocytosis and killing (Thiopentone blocks all these) —) increased life threatning infections.
- Propofol is particularly suitable for outpatient surgery.
- Intermittent injection or continuous infusion of propofol is frequently used for total Lv. anaesthesia (TINA) when supplemented by fentanyl.

- It is anaesthetics of choice for intubation in ICU and for patients with malignant hyperthermia.
- Side effects - pain on injection, myoclonus, apnea, L BP and rarely thrombophlebitis.
- Propofol infusion syndrome

.. A lethal syndrome, associated with infusion of propofol for 48 hours or longer.
2. Occurs in children and critically ill.
3. It occurs as a result of failure of free fatty acid metabolism and failure of the mitochondrial respiratory chain.
4. Features are - cardiomyopathy with acute cardiac failure, metabolic acidosis, skeletal myopathy, hyperkalemia, hepatomegaly and lipemia

86. Not a sign of stellate ganglion block?

a) Miosis

b) Exopthalomos

c) Nasal congestion

d) Conjunctival redness

Correct Answer - B
Ans. is 'b' i.e., Exopthalomos

- There is enophthalmos (not exophthalmos)

Stellate ganglion block

- Stellate ganglion is formed by fusion of lower cervical and first thoracic ganglion. It is blocked anterior to the tubercle of transverse process of C_6 vertebra i.e., chassaignac tubercle at the level of cricoid cartilage.
- Signs of successful block are : - Horner syndrome (miosis, ptosis, anhydrosis, enophthalmos, absence of ciliospinal reflex), flushing of face, conjuctival congestion, Nasal stuffiness (Gutman's sign), Injection of tympanic membrane *(muller's syndrome),* Increased skin temprature and lacrimation.
- Stellate ganglion block is indicated in : -

1. Treatment of *acute herpes zoster* in the distribution of the trigeminal nerve, cervical and upper thoracic dermatomes.
2. Acute vascular insufficiency of upper limb and face.
3. Frost bite
4. Reflex sympathetic dystrophy of face, neck and upper extremities.
5. Raynaud's syndrome of upper extremities.

87. The term "balanced anaesthesia" has been given by?

a) Simpson

b) Fischer

c) Lundy

d) Mortan

Correct Answer - C

Ans. is 'c' i.e., Lundy

- Term 'balanced anaesthesia' was introduced by Lundy in 1926.

Balanced anaesthesia

- The cardinal feature of general anaesthetics are : ?

1. Loss of all sensations, especially pain
2. Sleep (unconciousness) and amnesia
3. Immobility and muscle relaxation
4. Abolition of reflexes

- In modern practice of balanced anaesthesia these modalities are achieved by using combination of inhaled and iv.drugs.

88. High spinal anaesthesia is associated with?

a) Decreased BP & decreased heart rate

b) Increased BP & decreased heart rate

c) Decreased BP & increased heart rate

d) Increased BP & increased heart rate

Correct Answer - A

Ans. is 'a' i.e., Decreased BP & decreased heart rate

- Spinal anesthesia ascending into the cervical levels (high spinal anesthesia) causes severe hypotension, bradycardia and respiratory insufficiency.Complications of spinal anaesthesia

Intraoperative	Postoperative
	Haedache (post dural puncture headach) - most common
Hypotension (mostcommon)	Cranial nerve palsies (any cranial nerve except the 1^{st},9^{th} & most commonly 6^{th} nerve is involved)
Bradycardia10th	
Respiratorydepression	
Cardiac arrest	
Hypothermia in elderly	
	Cauda equina

	syndrome Arachnoiditis

89. Eutectic mixture of local anaesthetic (EMLA) cream is

a) Bupivacaine 2.0% + Prilocaine 2.5%

b) Lidocaine 2.5% + Prilocaine 2.5%

c) Lidocaine 2.5% + Prilocaine 5%

d) Bupivacaine 0.5% + Lidocaine 2.5%

Correct Answer - B
Ans. is 'b' i.e., Lidocaine 2.5% + Prilocaine 2.5%
Eutectic mixture of local anaesthetic (EMLA)

- This is unique topical preparation which can anaesthetise intact skin.
- It is a mixture of 2.5% lidocaine and 2.5 prilocaine.
- It acts slowly and the cream must held in contact with skin for at least 1 hour.
- EMLA is used : to make venepuncture painless especially in children, and for procedure like skin grafting & circumcision.
- As systemic absorption of prilocaine can cause methemoglobinemia, EMLA should not be used on mucocutaneous membrane or in very small child.

90. Which anaesthetic belongs to ester group?

a) Procaine

b) Times New Roman

c) Lignocaine

d) Propofol

Correct Answer - A
Ans. is 'a' i.e., Procaine

- **Esters (aminoesters) :-** Procaine, chlorprocaine, tetracaine (amethocaine), Benzocaine, Cocaine.
- **Amides (aminoamides)** Lignocaine, Mepivacaine, Prilocaine, Bupivacaine, Etidocaine, Ropivacaine , Dibucaine.

91. The latest AHA 2010 for CPCR in basic life support by two individuals for cardiac external massage & ventilation in adult is?

a) 30-2

b) 15-1

c) 15-2

d) 30-1

Correct Answer - A
Ans. is 'a' i.e., 30-2

92. Best local anaesthetic for ophthalmic surgery is

a) Tetracaine

b) Prilocaine

c) Procaine

d) Bupivacaine

Correct Answer - D
Ans. is 'd' i.e., Bupivacaine

- The choice of local anaesthetic for ocular surgery varies.
- But lidocaine (2%) and bupivacaine (0.5-0.75%) are used most commonly.
- Generally the use of 1:1 mixture of 2% lidocaine (xylocaine) and 0.50% bupivacaine along with adrenaline and hyaluronidase in facial, retrobulbar and peribulbar blocks is common.

93. Percentage of adrenaline with lignocaine for local infilteration is?

a) 1:1000

b) 1:10000

c) 1:100

d) 1:50000

Correct Answer - D
Ans. is 'd' i.e., 1:50000

- The most common concentrations of epinephrine combined with local anaesthetics are 1:50,000 (0.02 mg/ml), 1:100,000 (0.01 mg/ml) and :200000 (0.005 mg/ml).
- The 1:50000 concentration is manufactured in combination with 2% lidocaine.
- The 1:100,000 concentration is manufactured in combination with 2% lidocaine and 4% articaine.
- The 1:200,000 concentration is manufacture in combination with 4% prilocaine, 4% articaine and 0.5% bupivacaine

94. Local anaesthesia causing methemoglobinemia ?

a) Procaine

b) Prilocaine

c) Etodicaine

d) Ropivacaine

Correct Answer - B
Ans. is 'b' i.e., Prilocaine
Prilocaine and benzocaine can cause methemoglobinemia.

Important facts

- Chlorprocaine is the shortest acting LA.
- Dibucaine is the longest acting, most potent and most toxic LA.
- Bupivacaine is the most cardiotoxic LA (Ropivacaine is a newer bupivacaine congener with less cardiotoxicity). o Levobupivacaine (The S (-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure. o Prilocaine can cause Met haemoglobinemia.
- Lignocaine is the most commonly used LA.
- Bupivacaine has the highest local tissue irritancy.
- Chlorprocaine is contraindicated in spinal anaesthesia as it can cause paraplegia due to presence of neurotoxic preservative sodium metabisulphite.
- Procaine is the LA of choice in malignant hyperthermia

95. Intraocular pressure is increased by which anaesthetic?

a) Ketamine

b) Propofol

c) N_20

d) Isoflurane

Correct Answer - A
Ans. is 'a' i.e., Ketamine

96. A 6 year old boy taken for ophthalmic examination under anaesthesia. His father told that he has lower limb weakness & his elder brother died at 14 years of age. Which anaethetic drug has to be avoided-

a) Succinylcholine

b) Pancuronium

c) Atracurium

d) Dexacurium

Correct Answer - A
Ans. is 'a' i.e., Succinylcholine
Succinylcholine

- SCh is a depolarising skeletal muscle relaxant.
- It causes sustained partial depolarization of muscle end plate —> *intially produce twitching and fasciculation* followed by flaccid paralysis.
- *It is the shortest and fastest acting skeletal muscle relaxant.*
- *It is the only muscle relaxant which stimulate autonomic ganglia and vagus.*
- *SCh is the most commonly used muscle relaxant for passing endotracheal tube* (mivacurium and rocuronium are alternatives).
- *SCh is rapidly hydrolysed by plasma cholinesterase,* some patients have genetically determined abnormality or deficiency of pseudocholinesterase, in them, SCh causes phase II block.
- It can cause *muscle fasiculations* and soreness, change in BP and HR, arrythmia, histamine release and IC efflux from muscles.

- *Dangerous hyperkalemia can occur in patients with burn, crush injury, muscular dystrophy, GB. Syndrome, paraplegia or hemiplagia, mysthenia gravis and rhabdomyolysis contraindicated in such patients. o* It can accentuate malignant hyperthermia caused by halothane.
- SCh causes increase in all pressures —> inraocular, intracranial, BP, and intrabdominal —> contraindicated in glaucoma, head injury.

97. Critical temperature of oxygen is?

a) 20

b) 118

c) 36.5

d) 400C

Correct Answer - B
Ans. is 'b' i.e., -118

98. Disadvantage of ketamine is?

a) Increased heart rate

b) Increased ICT

c) Delirium

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

- When administered to adult patients as a sole anaesthetic agent, ketamine frequently cause *emergence reaction* characterized by anxiety, hallucination, delirium. Moreover, ketamine shows cardiovascular stimulant property (increases heart rate and BP), increases salivary and bronchial secretions, and may increase intracranial, intraocular and pulmonary pressure. All of these features have been advocated as limitations for its usefulness.

99. All are false about N_20 except?

a) Least potent

b) Good muscle relaxant

c) Lighter than air

d) No diffusion hypoxia

Correct Answer - A
Ans. is 'a' i.e., Least potent
Nitrous oxide N_{2Q}

- It is colourless, odourless, *heavier than air,* nonirritating and noninflammable gas. o It is also called *laughing gas.*
- MAC is 105% (least potent) - even pure N_20 at 1 atmospheric pressure can not produce adequate anaesthesia. o *It has good analgesic but poor muscle relaxant activity.*
- It is supplied under pressure in *blue coloured* steel cyclinders.
- It has very low blood solubility —> induction is quick and smooth with rapid recovery.
- Second gas effect and diffusion hypoxia occur with N_20 only.
- N_20 is generally used as a *carrier and adjuvant* to other anaesthetics —> A mixture of 70% N_20 + 25 - 30% 0_2+ 0.2 - 2% another potent anaesthetic is employed for most of the surgical procedures.
- Entonox is a mixture of 50% N_20 and 50% 02.
- It has little effect on respiration, heart and BP.
- *It can cause bone marrow depression and vit $_{B12}$ deficiency.*
- N_20 is the only anaesthetic reported to produce hematologic toxicity and neurotoxicity with long term administration.
- *Both toxicities are the result of the interaction of N_20 with vit B12.*

- Complete bone marrow failure can be expected after several days of continuous exposure.
- *Bone marrow changes are preventable by pretreating patients with large doses of folinic acid.*
- Other manifestations of vit B 12 deficiency eg. megaloblastic anemia, subacute combined degeneration of cord may also occur.
- Methemoglobinemia and laryngospasm may occur.
- It is contraindicated in patients with air cavities like pneumothorax, pneumoperitoneum and volvulus —> expansion and increase in pressure occur.

100. Which anaesthetic is contraindicated in renal failure?

a) Isoflurane

b) Desflurane

c) Halothane

d) Methoxyflurne

Correct Answer - D
Ans. is 'd' i.e., Methoxyflurne
Methoxyflurane

- It was most potent inhalation agent (least MAC), but not used not (now Halothane is most potent). o It should not be used in closed circuit (reacts with rubber tubing of the losed circuit).
- It has slowest onset & recovery (however now ether has slowest onset & recovery as methoxyflurane is not used). o Boiling point *is* more than water (104°C).
- *Intrarenal metabolism of methoxyflurane and subsequent intrarenal production of fluoride ion is the significant cause of methoxyflurane renal toxicity.*
- It *can* cause high output renal failure and hepatotoxicity

101. Conscious sedation is ?

a) CNS depression with uncociousness

b) Sedation with inability to respond to command

c) Sedation with ability to respond to command

d) Any of the above

Correct Answer - C

Ans. is 'c' i.e., Sedation with ability to respond to command

- Conscious sedation is a technique in which drugs are used to produce a state of CNS depression (but not
- unconsciousness), enabling surgical procedure to be carried out while maintaining communication with the patient
- who is able to respond purposefully to commands and maintain a patent airway throughout.
- The protective airway reflexes are not lost, therefore conscious sedation is safer.
- However, by itself, it is not able to suppress pain of dental procedures; local anaesthetic must be injected in addition.
- Drugs used for conscious sedation are -

1. N,O
2. Diazepam or midazolam
3. Propofol
4. IM promethazine
5. IV fentanyl

102. During rapid induction of anesthesia ?

a) Sellick's maneuver is not required

b) Pre-oxygenation is mandatory

c) Suxamethonium is contraindicated

d) Patient is mechanically ventilated before endotracheal intubation

Correct Answer - B

Ans. is 'b' i.e., Pre-oxygenation is mandatory

- During rapid sequence induction preoxygenation is done for full 3 minutes. Sch is the muscle relaxant of choice for intubation. Sallieck's maneuver is done to prevent aspiration. Manual ventilation before intubation is avoided as this inflates the stomach and encourages regurgitation & aspiration.

Rapid sequence anaesthesia

- When anaesthesia is given for emergency surgery, it is called a "rapid sequence anaesthesia". The patients have full stomach because there is no starvation for anaesthesia (it is an emergency surgery) and gastric emptying is delayed due to trauma, acute abdomen. Therefore, the objective of rapid sequence anaesthesia is to secure the airway rapidly and prevent aspiration of gastric contents.
- Procedure of rapid sequence has following steps : -
- Li The patient is preoxygenatedfor full 3 minutes.
- Intravenous induction agent (thiopentone or propofol) is given.
- Sellick's maneuver (cricoid/pressure) is done to prevent aspiration.
- After ensuring the correct position of tube cricoid pressure is released and maintenance anaesthesia (NCO 66%, 0_2% 33%, & inhalational agent) is given. A non-depolarizing blocker is now

added.

- Suxamethenium (succinylcholine) is given as it quickly relaxes the laryngeal muscles so that rapid intubation can be done.
- Not done during rapid sequence anaesthesia : ?

.. Manual ventilation before intubation is avoided as this inflates the stomach and encourages regurgitation & aspiration.

2. Premedications are not given.

103. Who coined term anaesthesia ?

a) Morton

b) Holmes

c) Morgan

d) Priestly

Correct Answer - A
Ans. is 'a' i.e., Morton
Second gas effect and diffusion hypoxia

- In initial part of induction, diffusion gradient from alveoli to blood is high and larger quantity of anaesthetic is entering blood.
- If the inhaled *Concentration of anaesthetic is high (eg N_20),* Substantial loss of alveolar gas volume will occur and it creates negative intralveolar pressure that leads to removal of more gas from cylinder to alveoli --> Concentration effect.
- If another inhalation agent is (eg Halothane) is being given at the same time, it also will be delivered to lung from the cylinder (due to negative intraalveolar pressure) —> *Second gas effect.*
- *During recovery* reverse occurs - N_20 having low blood solubility, rapidly diffuses into alveoli and dilutes the alveolar air —> partial pressure of oxygen in alveoli is reduced.
- The resulting hypoxia is known as *diffusion hypoxia.*
- Diffusion hypoxia can be prevented by continuing 100% 0_2 inhalation for a few minutes after discontinuing N20, instead of straight away switching over to air.

Remember

- Concentration effect and secondary gas effect during induction.
- Diffusion hypoxia —> during recovering.

- All these occur with N_20 only

104. Drug used for emergency intubation is ?

a) Propofol

b) Ketamine

c) Eomidate

d) None

Correct Answer - A
Ans. is 'a' i.e., Propofol

- Emergency intubation in anaesthesia refers to rapid sequence anaesthesia (or rapid sequence intubation).
- Any inducing agent can be used, but thiopental and propofol are the preferred agent.

105. Maximum global warming is by?

a) Desflurane

b) Isoflurane

c) Sevoflurane

d) Halothane

Correct Answer - A

Ans. is 'a' i.e., Desflurane

- Desflurane is a greenhouse gas.
- It causes maximum global warming.

Global warming potential (as an equal amount of O2)	
Isoflurane	210 times
Sevoflurane	510 times
Desflurane	1620 times

106. Which anaesthetic drug contributes to green house effect?

a) Enflurane

b) Desflurane

c) Sevoflurane

d) Halothane

Correct Answer - B
Ans. is 'b' i.e., Desflurane

107. Most commonly used approach of brachial plexus block?

a) Interscalene

b) Supraclavicular

c) Infraclavicular

d) Axillary

Correct Answer - B
Ans. is `B' i.e., Supraclavicular
Brachial plexus block

- This is the second most commonly practised block after central neuraxial block (spinal & epidural anaesthesia). Brachial plexus block is used for upper limb surgeries.
- Brachial plexus can be blocked by 4 approaches : -

1. Interscalene approach

- Brachial plexus is blocked between anterior and middle scalene. This approach is not used routinely due to close proximity of vital structures. Ulnar nerve is usually spared by this approach because injection is given in close proximity of upper nerve roots and inferior nerve roots (C8-T 1) may be spared.
- This technique provides excellent anaesthesia and analgesia for shoulder and upper arm procedures. (in contrast to other three approaches which do not provide adequate shoulder anaesthesia).
- Complications include Horner syndrome (due to stellate ganglion block), phrenic nerve block, intravascular injection into carotids and epidural or intrathecal injections.

2. Supraclavicular approach

- This is the most commonly used approach. It involves the injection of local anaesthetic in close proximity to

- the trunks of the brachial plexus by inserting the needle lateral to subclavian vessels. The supraclavicular
- block is performed where the brachial plexus is most compact, consequently, it produces reliable and rapid
- onset anaesthesia and is particularly useful in a fast paced ambulatory surgery centre.
- Pneumothorax is the most common complication. Other complications include phrenic nerve block, intravascular injection in subclavian artery or vein, Horner syndrome, hematoma formation.

3. Infra-clavicular approach

- Infraclavicular block involves the injection of local anaesthetic in close proximity of cords of the brachial plexus. The axillary nerve may be spared as this nerve exits the brachial plexus sheath proximal to the level of infraclavicular block.

4. **Axillary approach**

- Axillary block involves the injection of local anaesthetic in close proximity of terminal branches of the
- brachial plexus. The major disadvantage of this approach is that mucocutaneous and intercostobrachial nerves are spared. So arm surgery cannot be performed. In contrast to interscalene approach, most intense
- block occur in (C7-T1) ulnar dermatomes and least in C5-C6 dermatomes.

108. Which of the following is safe even if injected intraarterial?

a) Thiopentone

b) Propofol

c) Mida7olam

d) Methohexitone

Correct Answer - B
Ans. is 'b' i.e., Propofol

- Accidental extravasation or intra-arterial injection of propofol does not cause adverse reactions"
- Primer of Anaesthesia "Intraartierial injection of propofol does not cause vascular injury" – Essentials of Anaesthesia
- Etomidate is also safe. –Miller's

Drugs associated with sever complications after intraarterial injection

1. Benzodiazepines : Diazepam, midazolam, temazepam, chlordiazapoxide
2. Phenothiazines : Promethazine, chlorpromazine, promazine
3. Barbiturates : Thiopentone, methexitone, secobarbitone, pentobarbitone
4. Amphetamines
5. Antibiotics : Flucloxacillin, Penicillin
6. Narcotics : Heroin, mepridine, propoxyphene, cocaine
7. Q Miscellaneous : Tubocurarine, atracurium

109. Critical temperature for liquid nitrogen is ?

a) 36·5°C

b) -20°C

c) -147°C

d) -242°C

Correct Answer - C
Ans. is 'c' i.e., -147° C

- Critical temperature (Tc) of a substance is the temperature at and above which vapour of that substance can not be liquified, no matter how much pressure is applied (Note : Below critical temprature a substance can exist as a liquid or gas depending on pressure).
- Critical temperature of N_2 is -146·9° C; that means N_2 can be liquified below -146·9° C --> So, liquid nitrogen must be stored below -146·9° C.

110. Supreme LMA characteristic is

a) Has no bite block

b) Used in infants

c) High pressure, low volume

d) Has built in drain tube

Correct Answer - D
Ans. is 'd' i.e., Has built in drain tube

- LMA supreme is one of the most advanced laryngeal mask airway (LMA).
- It has features of usual LMA with additional *Built-in drain tube and a bite block.*
- It has *high volume/low pressure* cuff which generates higher seal pressure. o It also provides a conduit for active suctioning of stomach.
- It can be used in infants as well as in adults.

111. In pediatric epidural anaestheisia, volume of local anaesthetic given to cause sacral dermatome block is?

a) 0.5 -1 ml/kg

b) 2 - 4 ml/kg

c) 5 - 10 ml/kg

d) None

Correct Answer - A

Ans. is 'a' i.e., 0.5 - 1 ml/kg

- Two most commonly used local anaesthetics for caudal block in children are :-

1. *Bupivacaine →0.25% concentration in dose of 1 ml/kg.*
2. *Ropivacaine → 0.2% concentration in dose of 1.2 ml/kg.*

- For easy calculation of volume :-

1. 0.5 mUkg for sacral blockade.
2. 0.75 ml/kg for lower thoracic blockade.
3. 1.25 ml/kg for upper thoracic blockade.

112. Fastest induction and recovery is seen with ?

a) Desflurane

b) N,0

c) Halothane

d) Enflurane

Correct Answer - A

Ans. is 'a' i.e., Desflurane

- *decreasing order* (Increasing order of B : G partition coefficient and blood solubility) : -

Desflurane (0.42)^{Q} > *Cyclopropane (0.44) > N_20 (0.47) > Sevoflurane (0.69)*^{Q} *> Isoflurane (1.38) > Enflurane (1.8) > Halothane (2.4) > Chloroform (8) > Trilene (9) > Ether (12) > Methoxyflurane (15)Q.*

113. Shortest acting local anaesthetics ?

a) Lignocaine

b) Bupivacaine

c) Etidocaine

d) Chlorprocaine

Correct Answer - D
Ans. is 'd' i.e., Chlorprocaine

Short duration Low potency	**Intermediate duration (30-90 min) Intermediate potency**	**Long duration (> 120 min) High potency**
Chloiprocaine (shortest acting) Procaine	Lignocaine o Mepivacaine o Prilocaine a Cocaine	Bupivacaine o Tetracaine o Etodicaine o Ropivacaine Dibucaine (longest acting)

114. Circuit of choice for controlled ventilation ?

a) Magill circuit

b) Type C

c) Type D

d) Type E

Correct Answer - C
Ans. is 'c' i.e., Type D

115. All are used for local infiltration except ?

a) Lidocaine

b) Ropivacaine

c) Dibucaine

d) Bupivacaine

Correct Answer - C
Ans. is 'c' i.e., Dibucaine

116. Drug of choice for Bier's block ?

a) Bupivacaine

b) Etidocaine

c) Ropivacaine

d) Lidocaine

Correct Answer - D
Ans. is 'd' i.e., Lidocaine
Intravenous regional Anaesthesia (Bier's block)

- Intravenous regional anaesthesia (IVRA) is used most often for surgery of the forearm and hand, but can also be used for distal leg and foot.
- First IV canula is inserted usually in the dorsum of hand.
- Then tourniquet cuff is applied to proximal arm.
- Limb is elevated and exsanguinated with the help of an elastic bandage (Esmarch).
- Now tourniquet cuff is inflated above systolic pressure (so that no blood can enter in that limb and the limb remains exsanguinated).
- Now the local anaesthetic solution is slowly injected into cannula.
- The veins are filled with only local anaesthetic as there is no blood →ocal anaesthetic can not be drained out from upper limb and can not enter in systemic circulation because of inflated cuff in proximal arm.
- The arm is anaesthetized in 6-8 minutes.
- Lidocaine without adrenaline is the DOC for this technique. —Goodman & Gilman IIthie 381 o A few clinician prefers prilocaine over lidocaine because of its higher therapeutic index - least toxic LA.
- Torniquet cuff deflation, premature release or failure of torniquet can

- cause release of LA into circulation and toxicity may occur→ So, cardiotoxic LAs like bupivacaine and etidocaine are contraindicated for Bier's block.

117. Smooth induction is seen by -

a) Ether

b) Halothane

c) Isoflurane

d) Enflurane

Correct Answer - C
Ans. is 'c' i.e., Isoflurane
Induction by inhalation agents

Unpleasant	Intermediate	Smooth
Ether	Halothane	Isoflurane
	En flurane	Desflurane
		Sevoflurane
		Nitrous oxide

118. True about conscious sedation are all except ?

a) CNS depression

b) Patient is conscious

c) Protective reflexes are abolished

d) Patient can obey commands

Correct Answer - C

- Ans. is 'c' i.e., Protective reflexes are abolished
- conscious sedation, protective reflexes are intact (has been explained in previous sessions).

119.

Longest part of optic nerve ?

a) Intraocular

b) Intracranial

c) Intraorbital

d) Intracranial

Correct Answer - C
. Ans. is 'c' i.e., Intraorbital
Optic nerve

- Each optic nerve *(second cranial nerve)* starts from the optic disc and extends up to optic chiasma, where the two nerves meet.
- It is the backward continuation of the nerve fibre layer of the retina, which consists of the *second order neurons i.e.,* axon originating from the ganglion cells.
- It also *contains the afferent fibres of the papillary light reflex.*
- Morphologically and embryologically, the optic nerve is comparable to a sensory tract.
- Unlike peripheral nerves *it is not covered by neurilemma* (so it does not regenerate when cut).
- The fibres of optic nerve, numbering about a million, are very fine (2-10 m in diameter as compared to 20 mm of sensory nerves).
- Optic nerve is about 47-50 mm in length and can be divided into 4 parts : ?
- Intraocular part (1 mm) : - It begins at optic disc (optic nerve head) and exits the nerve through a hole in sclera that is occupied by a mesh like structure called the *lamina cribrosa.* The nerve fibres from the retina leave the eye through pores (holes) in lamina cribrosa, a sieve-like structure made up of collagen meshwork.
- Intraorbital part (30 mm) : - Extends from back of the eyeball (at

lamina cribrosa) to the optic foramina.

- Intracanalicular part (6-9 mm) : - It lies within the optic canal and closely related to ophthalmic artery which crosses obliquely over it.
- Intracranial part (10 mm) : - It lies above the cavernous sinus and converges with its fellow from contralateral side to form optic chiasma.
- Like other parts of CNS, the optic nerve is covered by meningeal sheaths (Pia, archnoid and dura mater) as soon as the nerve leaves the eyeball.

120. Stocker's line is seen in?

a) Pterygium

b) Glaucoma

c) Posterior scleritis

d) Diabetic retinopathy

Correct Answer - A
Ans. is 'a' i.e., Pterygium

- *is line of iron deposition in the corneal epithelium seen adjacent to the head of the pterygium.*

121. Most common infection in contact lens users is?

a) Streptococcus

b) Pseudomonas

c) Staphylococcus

d) Neisseria

Correct Answer - B
Ans. is 'b' i.e., Pseudomonas
Complications of contact lens wear

- Complications of contact lens wearing are : ?
- Intolerance :- Some people find wearing contact lenses intolerable.
- Corneal complications :- Corneal abrasion, Corneal edema, Corneal vascularization, Microbial keratitis (Pseudomonas, acanthamoeba), Sterile corneal infiltrate.
- Giant papillary conjunctivitis
- Hypoxia :- Cornea is deprived of oxygen from the tear film by the presence of the contact lens. The cornea becomes edematous and new vessels may develop in the limbal area.
- Sensitivity :- This may develop in response to the preservative (thiomersal) in the cleaning and soaking solution. This results in allergic conjunctivitis.

122. Polyopia/diplopia is seen in which type of cataract?

a) Nuclear

b) Cortical

c) Posterior subcapsular

d) Anterior polar

Correct Answer - B
Ans. is 'b' i.e., Cortical

123. Pulsatile proptosis is a feature of ?

a) Orbital varix

b) Retinoblastoma

c) Cortico-cavernous fistula

d) Covernous sinus thrombosis

Correct Answer - C
Ans. is 'c' i.e., Cortico-cavernous fistula
Proptosis

- Proptosis is bulging of the eyeball (forward bulging) beyond the orbital margins. Though the word exophthalmos is synonymous with proptosis; some source define xophthalmos as a protrusion of globe greater than 18mm and proptosis as a protrusion equal to or less than 18 mm. Proptosis may be classified as follows : ?
- Unilateral Proptosis Proptosis of one eye.
- Inflammatory lesions :- Orbital cellulitis, abscess, cavernous sinus thrombosis, etc.
- Vascular disturbances :- Haemorrhage, varicose orbital veins, haemangioma, etc.
- Cysts and tumour :- Dermoid cyst, osteoma, lymphoma, lymphosarcoma, glioma, meningioma of optic nerve, retinoblastoma and metastatic deposits in orbit Neuroblastoma, breast, prostate, lung, GIT, Kidney, Ewing's tumor, melanoma, wilms tumor (Nephroblastoma)].
- Systemic diseases - Leukemias and endocrine disturbances such as Graves' disease and thyrotropic exophthalmos in initial stages.
- Paralysis of extraocular muscles as in complete ophthalmoplegia.
- Mucocele of PNS' - Frontal (most common), ethmoid, maxillary.

Bilateral Proptosis Proptosis of both eyes.

- evelopmental anomalies of the skull- Oxycephaly (tower skull).
- Endocrine exophthalmos, both thyrotoxic and thyrotropic.
- Inflammatory lesions - Cavernous sinus thrombosis.
- Tumours - lymphosarcoma, lymphoma, pseudotumour, nephroblastoma, Ewing's sarcoma.
- Systemic disease - Histocytosis (Hand - schuller christon disease), amyloidosis, wegner's granulomatosis.

Intermittent proptosis

- Proptosis developing intermittently and rapidly in one eye when venous stasis is induced by forward bending or lowering the head, turning the head forcibly, hyperextension of the neck, coughing, forced expiration with or without compression of the nostrils, or pressure on jugular veins. The most important casue is orbital varix (varicocele).
- Pulsatile proptosis : - Pulsatile proptosis is seen in caroticocovernous fistula; saccular aneurysm of ophthalmic artery; and due to transmitted cerebral pulsation as seen in meningocele, neurofibromatosis and traumatic or operative hiatus.

124. Photoretinitis is due to?

a) Snow reflection

b) Solar eclipse

c) Blunt trauma

d) None of the above

Correct Answer - B
Ans. is b i.e., Solar eclipse

Photoretitins

- Photoretinitis refers to damage to the retina resulting from exposure to the sunlight without adequate protection.
- In recent years it has become clear that photoretinitis is the result of photochemical reaction following exposure
- of the retina to shorter wave-length in the visible spectrum (i.e. blue/violet-blue light) with a small contribution
- by UV-A rays (and not by infrared rays which was thought earlier).
- Therefore, photoretinitis is also called as blue-light retinal injury.
- Photoretinitis is associated with religious sun gazing, solar eclipse observing, telescopy solar viewing, watching bright sunlight, or exposure to the flash of the short-circuiting of a strong current.
- The symptoms are persistent of the after image, progressing later into positive scotoma, and metamorphosia.
- Ophthalmoscopically, there may be no sign at first, or a pale spot is seen at the fovea with a brownish-red ring around it.
- Later there are deposit of pigments and small, grey punctate spots around the fovea, or even the formation of retinal hole

125. Parachute lesions are seen in ?

a) Eale's disease

b) Diabetes

c) Sickle cell anemia

d) All of the above

Correct Answer - D
Ans. is d i.e., All of the above

126. Foster Kennedy syndrome is

a) I/L Papilloedema CiL optic atrophy

b) I/L Optic atrophy C/L papilloedema

c) I/L Optic atrophy and papilloedema

d) UL Papilloedema C/L papilitis

Correct Answer - B
Ans. is 'c ib., I/L Optic atrophy C/L papilloedema

- Foster-Kennedy syndrome **: -** The frontal lobe, pituitary and middle-ear tumor such as meningiomata of the oflactory
- groove are sometimes associated with Ipsilateral pressure atrophy of the optic nerve and contralateral papilledema.
- Pseudo-Foster-kennedy syndrome **: -** It is characterized by occurence of unilateral papilloedema associated with
- raised ICT (due to any cause) and a pre-existing optic atrophy (due to any cause) on the other side.

127. Enucleation of the eyeball is contraindicated in ?

a) ndophthalmitis

b) Panophthalmitis

c) Intraocular tumours d

d) Painful blind eye

Correct Answer - B
Ans. is 'b' i.e., Panophthalmitis
Enucleation

- Enucleation is the removal of eyeball with a portion of optic nerve from the orbit while preserving all other orbital structures.
- Indications
- Absolute **:-** Retinoblastoma, malignant melanoma.
- Relative **:-** Painful blind eye, mutilating ocular injury, anterior staphyloma,phthisis bulbi, endophthalmitis, congenital anophthalmia or severe microphthalmia.
- Contraindications
- Enucleation is contraindicated :-
- After the onset of sympathetic ophthalmia
- Panophthalmitis **:-** Infection can spread via the cut ends of optic nerve sheath causing meningitis

128. Type of laser used for iridotomy ?

a) Excimer

b) Krypton red

c) Nd:YAG

d) Diode

Correct Answer - C
Ans. is 'c' i.e., Nd:YAG

129. Most common cause of ptosis ?

a) Myasthenia gravis

b) Paralysis of 3rd nerve

c) Idiopathic

d) Congenital

Correct Answer - D
Ans. is 'd' i.e., Congenital
Ptosis

- Ptosis is drooping of upper eyelid. Ptosis occurs when the muscles that raise the eyelid *(levator palpebrae superiors and muller's nuscles)* are not strong enough to do so properly. Etiology of Ptosis may be :?
  A) Congenital myogenic ptosis :- It is the *most common type of ptosis* and is often bilateral.
- It is associated with maldevelopment or congenital weakness of levator palpebrae sperioris. Congenital myogenic ptosis is characterized by drooping of one or both lids at birth, with a diminished or absent lid crease and lid lag on downgaze due to tethering effect of abnormal muscle. It may occur in following forms
- *Simple congenital ptosis :-* Not associated with other anomaly
- *Congenital ptosis with superior rectus weakness*
- *Blepharophimosis syndrome* Congenital ptosis, blepharophimosis, telecanthus and epicanthus inversus.
- Congenital synkinetic ptosis (Marcus Gunn jaw- winking Ptosis):- Retraction of ptotic lid with jaw movement like chewing, i.e., with stimulation of ipsilateral pterygoid muscle.
  B) **Acquird ptosis :-** Depending upon the cause acquired ptosis may be

- *Neurogenic :-* It is due to paralysis of 3rd nerve, Horner's syndrome, ophthalmoplegic migraine, multiple sclerosis. Neurogenic ptosis may also occur due to lesion of sympathetic nerve) supplying muller's muscle.
- *Myogenic* ***:-*** It is due to acquired defect of LPS muscle and may be seen in myasthenia gravis, dystrophia myotonica, ocular myopathy, oculopharyngeal muscular dystrophy, thyrotoxicosis, Lambert - Eaton mysthenia syndrome
- *Mechanical:-* It is due to excessive weight on the upper lid e.g in lid tumors, multiple chalazia, lid edema. It may also occur due to scarring *(cicatracial ptosis)* in atients with ocular pemphigoid and trachoma.
- *Aponeurotic ptosis* ***:-*** **I**t is due to defect of the levator aponeurosis in the presence of normal functioning muscle, e.g. involutional (senile) ptosis, post-operative ptosis.

130. Nerve carrying motor component of light reflex?

a) 1St nerve

b) 2" nerve

c) 3' nerve

d) 4th nerve

Correct Answer - C
Ans. is `C' i.e., 3rd nerve

131. Altitudinal visual field defect is seen in ?

a) Papilloedema

b) Retinitis pigmentosa

c) Anterior ischemic neuropathy

d) Buphthalmos

Correct Answer - C
Ans. is 'c' i.e., Anterior ischemic neuropathy
Anterior ischemic optic neuropathv (AION)

- It is a condition of local anoxia of the anterior region of the optic nerve.
- It is due to the *involvement of posterior ciliary artery and may be central retinal artery* causing infarct of the anterior part of the optic nerve and retina.
- It occurs commonly in *neglected acute attack of closed angle glaucoma, severe anemia, after a massive haemorrhage, and temporal arteritis.*
- There is *sudden loss of vision.*
- On examination there is swelling of the disc resulting in optic atrophy.
- Permanent altitudinal visual field defects are present.
- These involve two quadrants of either the superior or inferior visual field.

132. Upper Lid Retractors include

a) Muller muscle and superior rectus

b) Levator palpabrae superioris and superior oblique

c) Superior oblique and superior rectus

d) Levator palpabrae superioris & muller muscle

Correct Answer - D

Ans. is 'd' i.e., Levator palpabrae superioris & muller muscle

- The levator palpebrae superioris is the important upper eye lid retractor. Injury or weakness to this muscle leads to ptosis.
- This muscle is supplied by occulomotor (3') nerve.
- Deep part of the elevator muscle is the Muller's muscle, which is sympathetically innervated.
- In hyperthyroidism, sensitization of the Muller muscle leads to upper eyelid retraction and pseudoproptosis.
- On the other hand, in Horner's syndrome loss of this muscle action leads to ptosis.
- The capsulopalpebral fascia assists in lower eyelid retraction and coordinates with eyeball movement. It arises as an extension of the inferior rectus and inserts into the lower edge of the lower tarsus and the adjacent orbital septum.

133. A patient with ptosis, upper 4 mm of cornea is covered by upper eyelid. Grade of Ptosis is ?

a) Mild

b) Moderat

c) Severe

d) Profound

Correct Answer - A
Ans. is 'a' i.e., Mild

- In unilateral cases of ptosis, difference between the vertical height of palpebral fissures of the two sides indicates the degree of ptosis.
- In bilateral cases it can be determined by measuring the amount of cornea covered by the upper eyelid and then substracting 2 mm.
- Depending upon its amount the ptosis is graded as -
- 1:1 Mild : 2 mm
- Moderate : 3 mm
- Severe : 4 mm
- In this question, 4 mm of cornea is covered by upper eyelid. Substracting 2 mm from this means there is 2 mm of ptosis, i.e. mild grade

134. Schwable's ring is seen in which layer of cornea

a) Bowmann's membrane

b) Stroma

c) Descemet's membrane

d) Substantia propria

Correct Answer - C
Ans. is 'c' i.e., Descemet's membrane
Histology of cornea

- The cornea has five distinct layers (from superficial to deep) : ?

Epithelium : - It is the outermost part of cornea and is composed of stratified squamous non-keratinized epithelial cells.
Bowman's membrane : - It is not a true membrane but simply a condensed superficial part of stroma. destroyed, it does not regenerate.
Stroma (Substantia propria) : - This layer constitutes most of the cornea (90% of thickness). It consists of collagen fibrils (lamellae) embedded in hydrated matrix ofproteoglycans.
Descemet's membrane : - This layer bounds the stroma posteriorly. In the periphery it appears to end at the anterior limit of trabecular meshwork as Schwahle's ring.
Endothelium : - It is a single layer of flat polygnonal cells. The endothelial cells contain 'active-pump' mechanism and is the most important layer in maintaining the transparency of cornea.

135. Phase II block is seen with -

a) SCh infusion

b) Single dose SCh

c) Mivacurium

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., SCh infusion

- Under certain conditions depolarizing agents produce dual mechanism of neuromuscular blockade which can be divided into two phases :

a. **Phase I block**

- Rapid in onset
- Result from persistant depolarization of muscle end plate.

b. Phase II block

- Slow in onset
- Results from desensitization of receptor to ACh.
- Phase II block is seen when fluorinated anaesthetics have been given or when SCh is injected in high dose or infused continuously.
- SCh also produces phase II block in patients with atypical or deficient pseudocholinesterase.

136. Anaesthetic gas with maximum respiratory irritation

a) Halothane

b) Enflurane

c) Desflurane

d) Sevoflurane

Correct Answer - C
Ans:C. Desflurane
Desflurane and isofurane when used for induction cause respiratory irritation due to their pungent smell leading to breath holding and coughing.
Halothane and sevoflurane do not cause such effects.

137. IV administration of which anesthetic drug is most painful among the following?

a) Methohexital

b) Ketamine

c) Propofol

d) Etomidate

Correct Answer - C
Ans: c. Propofol
Propofol preparation:

- **Oil-based** preparation (**soybean oil, egg lecithin & glycerol)**.
- Hence, **pain on injection** & rarely thrombophlebitis.

138. Which of the following is not cardiodepressive?

a) Propofol

b) Thiopentone

c) Ketamine

d) Etomidate

Correct Answer - D
Ans:D. Etomidate
Major advantage of etomidate:

- Cardiovascular stability after induction.

Effects of etomidate induction dose:

- Negligible increase in heart rate.
- Little decrease in blood pressure/cardiac output.
- Little effect on coronary perfusion pressure, while reducing myocardial O2 consumption.

139. Which of the following is the most common method used to know depth of anaesthesia?

a) BIS

b) Oesophageal contractility

c) Depressed responses

d) Hypotension

Correct Answer - A
Ans:A. BIS
Bispectral index:
* 1st scientifically validated & commercially available monitor to check depth of anaesthesia.
* Utilizes many parameters (EEG signals, eye blinks) to calculate depth score.
Adequate depth:
* Score of 45-60.
Fully awake state:
* Score of 100
Completely silent brain: 0.

140. MRP 2 associated with which of the following?

a) Rotor syndrome

b) Dubin-Johnson syndrome

c) Crigler-Najjar syndrome

d) Gilbert syndrome

Correct Answer - B
Ans:B. Dubin-Johnson syndrome.
Dubin-Johnson syndrome:

- An autosomal recessive disorder.
- Caused by gene mutation responsible for human canalicular multispecific organic anion transporter (cMOAT) protein/ also referred “multidrug resistance protein 2 (MRP2)” or ABCC2.

141. In ophthalmology a patient is allergic to aminoesters. What can be used?

a) Cocaine

b) Procaine

c) Prilocaine

d) Bupivacaine

e) Tetracaine

Correct Answer - C:D
Ans. is'c'i.e., Prilocaine &'d'i.e., Bupivacaine
[Ref: Lee's 13th/e p. 486]

- Prilocaine & bupivacaine are amides (amcinonide). Other three are aminoesters.

142. Drug(s) not given as transdermal patch:

a) Fentanyl

b) Diclofenac

c) Morphine

d) Clonidine

e) Buprenorphine

Correct Answer - B:C
Ans.B,Diclofenac & C,Morphine
[Ref: KDT 7th/476

- Transdermal fentanyl (Durogesic) has become available for use in cancer/terminal illness.
- Butrans skin patches contain buprenorphine an opioid pain medication.
- Clonidine transdermal delivery (patch) systems have been available since the 1980

143. Mallampatti's classification is for?

a) Mobility of cervical spine

b) Mobility of atlanto axial joint

c) Assessment of free rotation of neck before intubation

d) Inspection of oral cavity before intubation

Correct Answer - D

Ans. D. Inspection of oral cavity before intubation

[Ref Morgan 4thie p. 113]

Mallampati score (Mallampati oropharyngeal scale):

- Mallampati grading is used to evaluate the visibility of tonsil and tonsillar fossa which in turn assess the adequate mouth opening depending upon the grade.
- Indications of Mallampati score are Oral cavity assessment to rule out difficult intubation (Inspection of oral cavity before intubation) & Sleep apnea evaluation.

144. Anesthetic agent of choice in asthma patient is?

a) Thiopentone

b) Methexitone

c) Ketamine

d) Propofol

Correct Answer - C
Ans. C. Ketamine
[Ref Miller's 7"le p. 744-746]
Ketamine is a potent bronchodilator; therefore it is the anesthetic agent of choice in bronchial asthma patients.
Halothane is the inhalational agent of choice in asthmatics.

145. Pin index system is a safety feature adopted in anesthesia machines to prevent?

a) Incorrect attachment of anesthesia machines

b) Incorrect attachment of anesthesia face masks

c) Incorrect inhalation agent delivery

d) Incorrect gas cylinder attachment

Correct Answer - D
Ans. D. Incorrect gas cylinder attachment
[Ref Lee 13th/e p. 85]
Pin index system: - This is the safety mechanism so that one cylinder cannot be fitted at the other's position.

146. Propofol shows following effect on EEG?

a) Activation

b) Depression

c) Depression in low doses and activation in high doses

d) None of the above

Correct Answer - B
Ans. B. Depression
EEG changes during anesthesia:
EEG Depression caused by,

- Inhalational agents (1-2 MAC)
- Barbiturates
- Opioids
- Etomidate
- Propofol
- Hypocapnia
- Marked hypercapnia
- Hypothermia
- Late hypoxia, ischemia

147. Type E circuit is used for?

a) Spontaneous ventilation

b) Controlled ventilation

c) Children

d) An used for all of the above indications

Correct Answer - C
Ans. C. Children
[Ref Ajay Yadav 4th/e p. 29, 30]
Circuit of choice for spontaneous ventilation in adult -4 Mapleson A
Circuit of choice for controlled ventilation in adult Mapleson D (Bain circuit)
Circuit of choice for children - Type F, i.e. Jackson-Rees (first choice) and type E, i.e. Ayre's T piece (second choice)

148. Anesthetic agent leading to bradycardia is?

a) Pancuronium

b) Vecuronium

c) Atracurium

d) Propofol

Correct Answer - D
Ans. D. Propofol
Bradycardia causing anesthetic agents:

- Succinylcholine
- Propofol
- Opioids anesthetics (fentanyl and its congers)

149. Size of LMA for a 15kg child is?

a) 1

b) 2

c) 3

d) 4

Correct Answer - B
Ans. B. 2
LMA according to patient's weight and age:
- 10-20kgs, infants & children

150. Intra-arterial thiopentone injection leads to?

a) Ischemia

b) Vasodilatation

c) Vomiting

d) Hypertension

Correct Answer - A
Ans. A. Ischemia
[Ref Ajay Yadav 4th/e p. 80; Lee 13thie p. 155]
Ischemia

- Inadvertent intra-arterial injection of thiopentone is a very dreadful complication.
- It produces thrombosis, vasospasm, ischemia, necrosis and finally gangrene.
- The first symptom is burning pain. The first sign is blanching of the hand due to vasospasm.

151. In mechanical ventilation, peak pressure in inspiration denotes ?

a) Compliance of lung

b) Capacity of inspiratory muscles

c) Airway resistance

d) All of the above

Correct Answer - C
Ans. C. Airway resistance
[Ref: Essentials of anaesthesia-786]
Pressures in mechanical ventilation
Peak pressure

- Peak pressure applies when there is airflow in the circuit, i.e., during inspiration.
- Peak pressure determines airway resistance.

152. Hypotension following spinal anesthesia can be best prevented by?

a) Preloading with colloids

b) Using small size needle

c) Preloading with crystalloids

d) All of the above

Correct Answer - A
Ans. A. Preloading with colloids
[Ref Lee 13th/e p. 509, 510; Morgan 4th/e p. 297]
Hypotension is the most common complication of spinal anesthesia. It arises due to blocking of sympathetic root fibers and is usually accompanied by bradycardia (Preganglionic block of the sympathetic nerves to heart T1-T4) and nausea.
Hypotension can be prevented by preloading the patient with colloids, Preloading with crystalloid does not prevent hypotension because large volumes of crystalloids quickly redistribute from intravascular to extravascular space.
Beach chair position also prevents hypotension.

153. Propofol vial, once opened, should be used within?

a) 2 hours

b) 4 hours

c) 6 hours

d) 8 hours

Correct Answer - C

ANs. C. 6 hours

[Ref: Lee 13th/e p. 158-160; Morgan 4thle p. 200-202]

- Propofol is oil based preparation containing soybean oil, egg lecithin, and glycerol. The color of solution is milky white.
- Solution should be used within 6 hours after opening the vial because there have been death reports following the use of contaminated solution as egg lecithin is a good medium for bacterial growth.
- To prevent this problem recently available propofol preparations have disodium edetate or sodium metabisulfite as antimicrobial agent.

154. Which of the following agent is associated with maximum histamine release?

a) d-Tubocurarine

b) Cisatracurium

c) Pancronium

d) Rocuronium

Correct Answer - A
Ans. A. d-Tubocurarine
Histamine release is caused by → D-TC (maximum tendency), succinylcholine, mivacurium, doxacurium, atracurium, tubocurarine can cause bronchoconstriction.

155. What is the intubation dose of pancuronium?

a) 0.1 mg/kg

b) 1 mg/kg

c) 10 mg/kg

d) 20 mg/kg

Correct Answer - A
Ans. A. 0.1 mg/kg

156. Relative contraindication of neuraxial/regional anesthesia is?

a) Hypertension

b) Renal disease

c) Sepsis

d) Diabetes

Correct Answer - C
Ans. C. Sepsis
[Ref Morgan 4th/e p. 299]
Contraindications to neuraxial block (spinal & epidural)

- Absolute :- Infection at the site of injection, patient refusal, coagulopathy or other bleeding disorder, severe hypovolemia, increased ICT, severe aortic or mitral stenosis.
- Relative :- Sepsis, unto-operative patient, pre-existing neurological deficit, demyelinating lesions, severe spinal deformity, stenotic valvular heart disease.

157. "Triangle of Petit" is a landmark for which block?

a) Spinal block

b) Bier's block

c) TAP block

d) Epidural block

Correct Answer - C
Ans. C. TAP block
[Ref Miller's anesthesia E-book p. 1735]
* Transverse abdominis plane (TAP) block
- It is a peripheral nerve block designed to anesthetize the nerves supplying the anterior abdominal wall (T6 to L1).
- The point of entry for the blind TAP block is the lumbar triangle of Petit.
- This is situated between the lower costal margin and iliac crest.
- It is bound anteriorly by the external oblique muscle and posteriorly by the latissmis dorsi.

158. CNS affection of a local anesthetic agent leads to?

a) Convulsion

b) Perioral numbness

c) Depression

d) All of the above

Correct Answer - D
Ans. D. All of the above
[Ref Morgan 4thle p. 270]
Manifestations of local anesthetic toxicity

- Early symptoms (Prodrome) Circumoral numbness, dizziness, tongue paresthesia, restlessness, tinnitus, agitation.
- CNS symptoms :- These are biphasic i.e. excitation (convulsions, restlessness, agitation & tinnitus), followed by depression (drowsiness, disorientation, respiratory depression, unconciousness).
- Cardiovascular manifestations :- hypotension, cardiac arrest, coma

159. Succinylcholine is contraindicated in?

a) Hyperkalemia

b) Hypokalemia

c) Hypercalcemia

d) Hypocalcemia

Correct Answer - A
Ans. A. Hyperkalemia
[Ref Morgan Pie p. 214]
Sch can cause dangerous hyperkalemia in and is contraindicated in: Burn, massive trauma, crush injury, Severe intraabdominal infection (sepsis).

160. Benzocaine is used in which type of anesthesia?

a) Topical

b) Spinal

c) Epidural

d) All of the above

Correct Answer - A
Ans. A. Topical
[Ref Morgan 4th/e p. 270]
Benzocaine and cocaine are used only in topical anesthesia .

161. A patient with normal succinylcholine metabolism will have Dibucaine number between?

a) 20-30

b) 40-45

c) 50-60

d) 70-80

Correct Answer - D
Ans. D. 70-80
Dibucain number : Dibucain (a local anaesthetic) inhibits 80% of normal pseudocholinesterase and 20% of atypical (non-functional) pseudocholinesterase. Therefore normal dibucain number is 70-80%.

162. American anesthetic association says that clopidogrel should be withheld how many days before surgery?

a) 1 day

b) 1 week

c) 3 weeks

d) 4 weeks

Correct Answer - B

Ans. B. 1 week

[Ref Ajay Yadav 3'/e p. 46]

Preoperative modifications of pre-existing drugs

Drugs which can be stopped	**Drugs which can be continued till the day of surgery**
Conventional dose aspirin & clopidogrel (antiplatelets)-I week before surgery	Antianginal (except aspirin)
Oral anticoagulants - 4 days before & switch to heparin, which is stopped 12 hours prior to surgery	Antiepileptics
Oral hypoglycemic (metformin) - 48 hours before urgery and switch to insulin	Antihypertensives (except AT-II antagoists) Levodopa
AT-II antagonists (losartan, valsarton) - 1 day prior	Digitalis
Lithium - 48-72 hours before surgery	TCAs
	Low dose aspirin

MAO inhibitors - 3 weeks
before surgery

- Note: Antiplatelet drugs like clopidogrel and conventional dose of aspirin should be stopped 7 days prior to surgery.
- But low dose aspirin can be continued till the day of surgery.

163. Among the following agents, maximum boiling point is associated with?

a) Sevoflurane

b) Isofurane

c) Methoxyflurane

d) Desflurane

Correct Answer - C
Ans. C. Methoxyflurane
[Ref Ajay Yadav 4th/e p. 63]
Boiling point of methoxyflurane is more than water (104°C)

164. Which of the following inhalational anesthetic agent most easily crosses blood brain barrier?

a) Methoxyflurane

b) Sevoflurane

c) Desflurane

d) Nitrous oxide

Correct Answer - A

Ans. A. Methoxyflurane

[Ref Ajay Yadav 4th/e p. 63]

- Oil : gas partition coefficient measures the lipid solubility of the agent and therefore solubility in the fat-rich tissues of the CNS (ability to cross BBB).
- Methoxyflurane has maximum oil : Gas partition coefficient —> Most lipid soluble & most easily crosses BBB.
- 1120 has minimum oil : Gas partition coefficient -p Least lipid soluble & therefore likely to cross BBB.

165. Which of the following anesthetic agent most is lipid soluble?

a) Nitrous oxide

b) Methoxyflurane

c) Isoflurane

d) Halothane

Correct Answer - B

Ans.B. Methoxyflurane

- Oil : gas partition coefficient measures the lipid solubility of the agent and therefore solubility in the fat-rich tissues of the CNS (ability to cross BBB).
- Methoxyflurane has maximum oil : Gas partition coefficient —> Most lipid soluble & most easily crosses BBB.
- 1120 has minimum oil : Gas partition coefficient -p Least lipid soluble & therefore likely to cross BBB.

166. Etomidate is not used for long term infusion because?

a) Results in adrenal suppression

b) May cause vasospasm

c) Results in cardiac arrhythmias

d) May cause increase in ICT

Correct Answer - A

Ans. A. Results in adrenal suppression

[Ref Morgan 4th/e p. 200]

- Etomidate suppresses corticosteroid synthesis in the adrenal cortex by reversibly inhibiting 1113-hydroxylase, which coverts 11-deoxycortisol to cortisol and by a relative minor effect on 17a - hydroxylase.
- Using a continuous etomidate infusion for sedation of critically ill trauma patients in intensive care units has been associated with increased mortality due to adrenal suppression.
- The mortality of patients exposed to a continuous infusion of etomidate for more than 5 days increased from 25% to 44%, mainly due to infectious causes such as pneumonia.

167. Arm tongue time is ?

a) 13 secs

b) 15 secs

c) 20 secs

d) 40 secs

Correct Answer - A
Ans. A. 13 secs
Arm to tongue time is method for knowing the circulation time i.e. time taken by a particle in the blood to flow from one point in circulation to other.
It measures the linear velocity of blood.
To calculate-the arm to tongue time 5 ml of 2% of decholine is injected into cubital vein.
As soon as drug reaches the tongue, patient feels a bitter taste.
The total time taken from arm to tongue is 13 seconds.
Similarly arm to lung time is calculated with the help of ether. It is d seconds.

168. Respiratory failure in a post operative patient is ?

a) Type 1

b) Type 2

c) Type 3

d) Type 4

Correct Answer - C

Ans. C. Type 3

Type 3 or perioperative respiratory failure

- Increased atelectasis due to low functional residual capacity (FRC) in the setting of abnormal abdominal wall mechanics.
- Often results in type I or type II respiratory failure.
- Can be ameliorated by anesthetic or operative technique, posture posture, incentive spirometry, post -operative analgesia, attempts to rower intra - abdominal-pressure.

169. Laryngeal mask airway [LMA] is contraindicated in?

a) Difficult airways

b) Ocular surgeries

c) Pregnant female

d) In CPR

Correct Answer - C

Ans. C. Pregnant female

Contraindications of LMA

1. Conditions with high risk of aspiration. i.e.,full stomach patients, hiatus hernia, pregnancy.
2. Oropharyngeal abscess or mass (tumor).
3. Massive thoracic injury
4. Massive maxillofacial trauma

170. All of the following are advantages of LMA except?

a) More reliable than face mask

b) Prevent aspiration

c) Alternative to Endotracheal intubation

d) Does not require laryngoscope & visualization

Correct Answer - B

Ans. B. Prevent aspiration

LMA is intermediate between the face mask and Endotracheal intubation in terms of reliability,
invasiveness and facilitation of gas exchange (face mask has minimum and endotracheal intubation has maximum).
LMA does not prevent asPiration + should not be used in full stomach patients.
LMA can be used as an alternative to endotracheal intubation for minor surgeries, where anaesthetist wants to avoid intubation.
LMA is introduced blindly (without laryngoscopy)

171. Only available depolarizing muscle relaxant is ?

a) Decamethonium

b) Suxamethonium

c) Mivacurium

d) None

Correct Answer - B
Ans. B. Suxamethonium
Suxamethonium (succinylcholine) and decamethonium come under depolarizing muscle relaxants.
Out of these only suxamethonium is avalaible for clinical use.

172. Which anesthetic gas was used by WTG Morton in his experiment ?

a) Nitrous oxide

b) Ammonia

c) Diethyl ether

d) Trichloroethylene

Correct Answer - C
Ans. C. Diethyl ether
William Thomas Green Morton, a dentist and medical student at Boston, after experimenting pon animals, gave a demonstration of general anesthesia, In 1846.

173. Suxamethonium acts through which channels ?

a) Sodium channels

b) Potassium channels

c) Calcium channels

d) Chloride channels

Correct Answer - A
Ans. A. Sodium channels
Suxamethonium (succinylcholine) is a depolarizing neuromuscular blocking agent which act by opening the Na+ channels at muscle end Plate.

174. Mouth to mouth respiration provides what percentage of oxygen ?

a) 10%

b) 16%

c) 21%

d) 100%

Correct Answer - B

Ans. B. 16%

Mouth to mouth breathing provides 0.8 to 1.2 liters of exhaled air per breath and 16% of oxygen which is enough to sustain life.

The use of Ambu bag and room air provides 21% O2.

The American Heart Association recommends tidal volumes of 700 to 1000 mL during mouth-to-mouth ventilation, but smaller tidal volumes of 500 mL may be of advantage to decrease the likelihood of stomach inflation, as mouth-to-mouth ventilation gas contains only 17% oxygen, but 4% carbon dioxide.

175. Which of the following anesthetic agent is a potent bronchodilator -

a) Propofol

b) Ketamine

c) Thiopentone

d) Methoxytone

Correct Answer - B
Ans. B. Ketamine
Ketamine is a potent bronchodilator, therefore it is the i.v. anaesthetic agent of choice in bronchial asthma patients.

176. Landmark for pudendal nerve block is ?

a) Ischial tuberosity

b) Iliac spine

c) Sacroiliac joint

d) None of the above

Correct Answer - A

Ans. A. Ischial tuberosity

Pudendal block:

- When performing a transvaginal pudendal nerve block, the ischial spine is the palpated through the wall of the vagina and the needle is then passed through the vaginal mucous membrane toward the ischial spine.
- In a perineal pudendal nerve block, the ischial tuberosity is palpated through the buttock and the needle is inserted into the pudendal canal about one inch deep medial to the ischial tuberosity.

177. Post dural puncture headache usually presents with in ?

a) 0-6 Hrs

b) 6-12 Hrs

c) 12-72 Hrs

d) 72-96 Hrs

Correct Answer - C
Ans. C. 12-72 Hrs
Post dural puncture headache is due to CSF leak.
Typical location is bifrontal or occipital.
Headache gets worsen on sitting or upright posture and is relieved by lying down position and abdominal pressure).
The hallmark of postdural puncture headache i.e., association with body position.
The onset of headache is usually 12-72 hrs following the procedure, however, it may be seen almost immediately.
In most cases it lasts for 7_10 days.

178. Cauda equina syndrome is associated with ?

a) Lidocaine

b) Halothane

c) N20

d) Ether

Correct Answer - A
Ans. A. Lidocaine
Caudaequina syndrome may occur as a rare devastating complication of spinal anesthesia due to maldistribution of injected local anesthesiaaround caudaequina nerve roots resulting in loss offunction ofthe lumbar plexus.
Associated with all local anesthetic like lidocaine, bupivacaine, chlorprocaine etc.

179. Not included in neuraxial block ?

a) Spinal block

b) Epidural block

c) Bier's block

d) Caudal block

Correct Answer - C
Ans, C. Bier's block
Central neuraxial block, as the name suggests, is the pertains to local anaesthetics placed forwaround the nerves of the central nervous system.
Examples are spinal anaesthesia, Epidural anaesthesia and caudallaesthesia.
BIER’s block or intravenous regional anesthesia (IVRA) is a form of regional anesthesia used most often for surgery of the forearm and hand.

180. Contraindication to neruaxial block is ?

a) Hypertension

b) Renal disease

c) Clotting disorders

d) Diabetes

Correct Answer - C

Ans. C. Clotting disorders

Contraindications of central neuroaxial block:

- Absolute :- Infection at the site of injection, patient refusal, coagulopathyor other bleeding disorder, severe hypovolemia, increased ICT, severe aortic or mitral stenosis.
- Relative :- Sepsis, unco-operative patient, pre-existing neurological deficit, demyelinating lesions, severe spinal deformity, stenotic valvular heart disease

181. Most common cause of maternal mortality in spinal anesthesia is ?

a) Allergy to local anesthesia

b) Nerve injury

c) High block

d) Hypotension

Correct Answer - C
Ans. C. High block
Most common cause of maternal death or brain damage in neuraxial anesthesia claims was high block"

182. Cocaine was first used as local anaesthetic by ?

a) Carl kollar

b) Holmer wells

c) Morton

d) None

Correct Answer - A
Ans. A. Carl kollar
Cocaine was the first local anesthetic used by Carl Koller. It was used for anaesthetizing cornea.

183. Levels of ether anesthesia were demonstrated by whom?

a) Morton

b) Guedel

c) Thompson

d) None

Correct Answer - B
Ans. B. Guedel
Guedel described four stages of ether anesthesia known as Guedel stages.

184. Infant circuit for anaesthesia ?

a) Bains circuit

b) Magill circuit

c) Ayres t piece

d) Water's circuit

Correct Answer - C
Ans. C. Ayres t piece

185. Ayre's T-piece is which type of circuit

a) Type A

b) Type B

c) Type E

d) Type D

Correct Answer - C
Ans. C. Type E

186. Most reliable indicator to prevent oesophageal intubation ?

a) Oxygen saturation on pulse oximeter

b) Measurement of CO_2 in exhaled air (Etco2)

c) Direct visualization of passing tube beneath vocal cords

d) Auscultation over chest

Correct Answer - B

Ans, B. Measurement of CO_2 in exhaled air (Etco2)

187. All are features of difficult airway except ?

a) Miller's sign

b) Micrognathia with macroglossia

c) TMJ ankylosis

d) Increased thyromental distance

Correct Answer - D
Ans. D. Increased thyromental distance
Decreased thyromental distance predicts difficult airway (not increased TM distance).

188. Ratio of 0_2: N_20 in Entonox is ?

a) 50 : 50

b) 60 : 40

c) 40 : 60

d) 25 : 75

Correct Answer - A
Ans. A. 50 : 50
Entonox contain equal amount (50/50) of N2O and O2.

189. Which is the critical temperature of N_20 ?

a) -118°C

b) -88°C

c) -26°C

d) -36.5°C

Correct Answer - D
Ans. D. -36.5°C
Critical temperature of N2O - 36.5
Critical pressure of N2O - 214.7 atm

190. Which anaesthetic agent is neither metabolised by liver nor by kidney ?

a) Atracurium

b) Vecuronium

c) Pancuronium

d) Rocuronium

Correct Answer - A
Ans. A. Atracurium

191. Fast induction and recovery is seen in?

a) Methoxyflurane

b) Ether

c) Halothane

d) N2O

Correct Answer - D
Ans. D. N2O
Speed of onset & recovery in decreasing order (Increasing order of B : G partition coefficient and blood solubility).

192. MAC of desflurane is ?

a) 1.15

b) 2

c) 4

d) 6

Correct Answer - D
Ans. D. 6

193. Which can replace N_20 as 0_2 carrier?

a) Argon

b) Xenon

c) Helium

d) None

Correct Answer - C
Ans. C. Helium
Helium can be used to replace nitrogen, as the carrier gas for oxygen (Helium) to reduce the work of breathing.

194. Benefit of ketamine ?

a) Causes decrease in BP

b) Good analgesic action

c) Decrease ICT

d) Decrease IOT

Correct Answer - B
Ans. B. Good analgesic action
Ketamine is different from most other anaesthetic induction agents in that it has significant analgesic action

195. Which of the following is a sympathomimetic ?

a) Propofol

b) Etomidate

c) Ketamine

d) N2O

Correct Answer - C
Ans. C. Ketamine
Ketamine has an indirect sympathomimetic action.

196. Which cant be given by Epidural anaesthesia ?

a) Morphine

b) Remifentanil

c) Alfentanil

d) Fentanyl

Correct Answer - B
Ans. B. Remifentanil
Opioids used for epidural analgesia are morphine, Fentanyl, Tramadol, Buprenorphine, alfentanil, sulfentanil, pentazocine. Ramifentanil contains glycine which can cause motor weakness --à hence not suitable for epidural analgesia.

197. Addition of epinephrine to lignocaine?

a) Increaseses distribution of LA

b) Decreases absorption of LA

c) Decreases duration of LA

d) Increases metabolism of LA

Correct Answer - B
Ans. B. Decreases absorption of LA
Vasoconstrictors are used along with LA which prolongs duration of action as rate of absorption is decreased due to vasoconstriction. For the same reason, metabolism of LA is reduced and toxicity is decreased as there is lesser absorption of LA,

198. Maximum concentration for epidural block ?

a) Bupivacaine

b) Lidocaine

c) Ropivacaine

d) Chlorprocaine

Correct Answer - D
Ans, D. Chlorprocaine

199. Vasoconstricator L.A. is ?

a) Cocaine

b) Procaine

c) Lidocaine

d) Chlorprocaine

Correct Answer - A
Ans. A. Cocaine
All LAs are vasodilator except cocaine. Cocaine causes vasoconstriction'
"Ropivacaine and bupivacaine also cause vasoconstriction"'

200. All are contraindications of spinal anaesthesia Except?

a) Bleeding disorder

b) Raised intracranial tension

c) Hypertension

d) Infection at injection site

Correct Answer - C
Ans, C. Hypertension

201. For prevention of headache during spinal anaesthesia?

a) Diluted solution of local anaesthetic should be used

b) Preloading with crystalloids

c) Finer I.P. needle should be used

d) Head end should be elevated

Correct Answer - C
Ans, C. Finer I.P. needle should be used
As single most imPortant predisposing factor is large bore needle use of fine needle prevents PDPH.

202. In newborn, chest compression should be started if heart rate is ?

a) < 120/min

b) < 100/min

c) < 80/min

d) < 60/min

Correct Answer - D
Ans, D. < 60/min
Compression for new born should be started if HR < 60/min'

203. Murphy's eye is seen in -

a) Macintosh laryngoscope

b) Endotracheal tube

c) LMA

d) Flexible laryngoscope

Correct Answer - B
Answer: B - Endotracheal Tube
The “Murphy eye” is the eponymous name for a hole on the side of most endotracheal tubes (ETTs) that functions as a vent, and prevents the complete obstruction of the patient's airway, should the primary distal opening of an ETT become occluded

204. Modified MallamPati grading is used in assessment of -

a) Difficult intubation

b) Airway obstruction

c) Death due to aspiration

d) Intubation

Correct Answer - A

Answer: A - Difficulty in intubation

Modified Mallampati classification

- **Class 0:** Ability to see any part of the epiglottis upon mouth opening and tongue protrusion
- **Class I**: Soft palate, fauces, uvula, pillars visible
- **Class II:**Soft palate, fauces, uvula visible
- **Class III**: Soft palate, base of uvula visible
- **Class IV**: Soft palate not visible at all
- **Test:** The assessment is performed with the patient sitting up straight, mouth open and tongue maximally protruded, without speaking or saying “ahh.”
- **Difficult laryngoscopy:**Good accuracy (area under Summary Receiver Operating Characteristic [SROC] curve 0.89 ± 0.05)
- **Difficult intubation:** Good accuracy (area under SROC curve 0.83 ± 0.03)
- **Difficult mask ventilation:** Poor predictor
- Used alone, the Mallampati tests have limited accuracy for predicting the difficult airway and thus are not useful screening tests
- Mallampati classification is only one of 11 nonreassuring findings during airway examination

205. Which nerve is tested for adequacy of anaesthesia -

a) Median Nerve

b) Ulnar Nerve

c) Radial nerve

d) Mandibular nerve

Correct Answer - A
Answer: A - Median nerve
Median nerve block can be evaluated by testing the lateral aspect of the ring finger

206. Most effective circuit in spontaneous anaesthesia is -

a) Mapleson A

b) Mapleson B

c) Mapleson C

d) Mapleson D

Correct Answer - A

Answer: A - Mapleson A

MAPLESON A - (Magill) CIRCUIT

Useful in spontaneous ventilation

- The patient inspires whatever is in the tube, using the bag as a volume reservoir.
- On eated tube and incoming fresh gas. When the bag is full, exhaled alveolar gas is vented frxpiration, the bag refills from a combination of expired gas going back up the corrugom the exhale valve, and then during any expiratory pause, FGF pushes the remaining alveolar gas out.
- Theoretically FGF = 0.7 x Valv should prevent significant rebreathing because deadspace gas (fresh) is not wasted, but FGF = VA more reliably prevents rebreathing.
- Tube volume must exceed (Vt-Vd) or alveolar gas could contaminate the bag.
- Inadequate FGF causes rebreathing . Difficult to detect from the CO2 waveform alone - all that happens is that the rapid fall on inspiration is delayed. If VA exceeds tubing volume, CO2 enters the bag and will be seen on inspiration on the capnogram.

Controlled ventilation

- If the anaesthetist fully closed the valve while squeezing the bag and

didn't open it until just before the bag filled, this circuit would be OK. More commonly the valve is partially closed - enough to permit adequate tidal volumes despite parallel loss of gas out the valve. FGF must be increased to compensate for gas lost during inspiration - typically 2.5x minute ventilation.

The Lack system

- A co-axial Magill, with the expiratory valve brought coaxially back to the Fresh Gas outlet. Not popular due to inefficiency during controlled ventilation.

207. What is mechanism of action of Curanium drugs as muscle relaxant?

a) Persistently depolarizing at Neuromuscular junction

b) Act competitively on Ach receptors blocking post-synaptically

c) Repetitive stimulation of Ach receptors on muscle end plate

d) Inhibiting the calcium channel on presynaptic membrane

Correct Answer - B

Answer: B - Act competitively on Ach receptors blocking post-synaptically

Candocuronium iodide is an aminosteroid neuromuscular-blocking drug or skeletal muscle relaxant in the category of non-depolarizing neuromuscular-blocking drugs.

Acts on Ach receptors competitively post-synaptically blocking them.

Potential adjunctive use in anaesthesia to facilitate endotracheal intubation & provide skeletal muscle relaxation.

Candocuronium demonstrated a short duration and a rapid onset of action, with little or no ganglion blocking activity, and it was only slightly less potent than pancuronium

208. During squint surgery, anesthesiologist sees the machine and see the bp suddenly drops to 40. What will be best immediate management -

a) Give atropine

b) Increase level of anesthesia

c) Ask the surgeon to stop the surgery

d) Give adrenaline

Correct Answer - D

Answer: D. Give adrenaline

Adrenaline should be given to raise the blood pressure. Epinephrine, also known as adrenalin or adrenaline, is a hormone, neurotransmitter, and medication. Epinephrine is normally produced by both the adrenal glands and certain neurons.

It plays an important role in the fight-or-flight response by increasing blood flow to muscles, output of the heart, pupil dilation, and blood sugar. It does this by binding to alpha and beta receptors.

Physiologic responses to epinephrine by organ

Organ	Effects
Heart	Increases heart rate; contractility; conduction across AV node
Lungs	Increases respiratory rate; bronchodilation
Systemic	Vasoconstriction and vasodilation
Liver	Stimulates glycogenolysis

Systemic	Triggers lipolysis
Systemic	Muscle contraction

209. Oxygen therapy may not be useful in

a) Asthma

b) Pneumonia

c) Subglottic stenosis

d) Pulmonary fibrosis

Correct Answer - D
Ans: D.Pulmonary fibrosis
Many EMS protocols indicate that oxygen should not be withheld from any patient, while other protocols are more specific or circumspect. However, there are certain situations in which oxygen therapy is known to have a negative impact on a patient's condition like paraquat poisoning,pulmonary fibrosis and lung damage resulting from bleomycin treatment.

210. Mouth to mouth respiration provides what percentage of oxygen ?

a) 10%

b) 16%

c) 21%

d) 100%

Correct Answer - B
Ans. B. 16%
Mouth to mouth breathing provides 0.8 to 1.2 liters of exhaled air per breath and 16% of oxygen which is enough to sustain life.
The use of Ambu bag and room air provides 21% O2.
The American Heart Association recommends tidal volumes of 700 to 1000 mL during mouth-to-mouth ventilation, but smaller tidal volumes of 500 mL may be of advantage to decrease the likelihood of stomach inflation, as mouth-to-mouth ventilation gas contains only 17% oxygen, but 4% carbon dioxide.