

INI CET Anaesthesiology

Sample Paper – 8

Duration: 14 Minutes

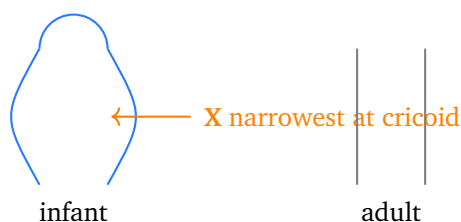
Maximum Marks: 15

Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Anaesthesiology content of **INI CET** (Institutes of National Importance Combined Entrance Test) conducted by AIIMS New Delhi.
- The **15-question** length matches the number of Anaesthesiology items you actually meet in the real 200-question paper.
- Each correct answer carries **+1 mark**. There is **negative marking of one-third (0.33) mark** for every incorrect answer; unattempted questions carry no penalty.
- Every question has **exactly one best answer**. Choose the single most appropriate option.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

Preoperative Assessment and Airway

- Q1.** The schematic below contrasts the infant airway (marked X at the narrowing) with the adult. Which single set of features correctly describes the *paediatric* airway?



- (A) A relatively small head with the larynx sitting low in the neck
- (B) A narrow, flat epiglottis with the narrowest point at the vocal cords



- (C) A large occiput, a larynx placed higher (more cephalad) and the narrowest point at the cricoid ring
- (D) An airway identical to the adult except smaller in overall size

Q2. To reduce the risk and severity of acid aspiration before an emergency anaesthetic, a rational pharmacological prophylaxis combines:

- (A) A strong opioid with a benzodiazepine
- (B) An inhaled bronchodilator with a corticosteroid
- (C) An H₂-receptor blocker (ranitidine), a non-particulate antacid (sodium citrate) and a prokinetic (metoclopramide)
- (D) A neuromuscular blocker with an anticholinesterase

Q3. The Revised Cardiac Risk Index (Lee index) used for perioperative risk stratification counts one point for each of several factors. Which of the following is one of its recognised risk factors?

- (A) A body mass index above 30
- (B) A history of ischaemic heart disease
- (C) Current cigarette smoking
- (D) An age over 40 years

General Anaesthesia and Pharmacology

Q4. Fentanyl is widely used in balanced anaesthesia. Compared with morphine, its approximate analgesic potency and its characteristic pharmacokinetics are:

- (A) About 100 times as potent as morphine, with a rapid onset and short duration due to redistribution
- (B) About one-tenth as potent as morphine, with a slow onset
- (C) Equipotent with morphine, with an identical duration
- (D) About 1000 times as potent as morphine, with a very long duration



- Q5.** In neuroanaesthesia the effect of anaesthetic agents on cerebral blood flow and intracranial pressure matters. Which statement is correct?
- (A) All intravenous and inhalational agents raise cerebral blood flow equally
 - (B) Volatile agents tend to increase cerebral blood flow (and so ICP) by vasodilatation, whereas propofol lowers cerebral metabolic rate, blood flow and ICP
 - (C) Propofol is a potent cerebral vasodilator that raises ICP
 - (D) Hyperventilation to a low arterial CO_2 raises intracranial pressure
- Q6.** A patient is known to be susceptible to malignant hyperthermia. Which combination lists only *trigger* agents to be avoided?
- (A) Suxamethonium and the volatile agents (halothane, sevoflurane, isoflurane, desflurane)
 - (B) Propofol and a remifentanil infusion
 - (C) Nitrous oxide with a rocuronium relaxant
 - (D) A regional block with local anaesthetic alone

Regional and Local Anaesthesia

- Q7.** The schematic shows the order in which nerve fibres are blocked as local anaesthetic takes effect (differential block, X marks the first fibres lost). What is the correct sequence of loss?



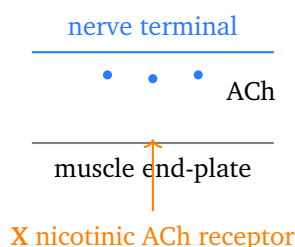
- (A) Motor first, then sensory, then autonomic
- (B) Sensory first, then motor, then autonomic
- (C) Autonomic (sympathetic) first, then sensory (pain and temperature), then motor last
- (D) All fibre types are blocked simultaneously



- Q8.** Ropivacaine is often preferred to bupivacaine for epidural and peripheral blocks chiefly because it:
- (A) Has a much faster onset and longer duration than any other agent
 - (B) Is not metabolised and so never accumulates
 - (C) Is less cardiotoxic and produces relatively more sensory than motor block (differential sparing of motor function)
 - (D) Can be given safely by the intravenous route in large doses

Monitoring, Fluids and Equipment

- Q9.** The pin-index safety system and colour coding of medical gas cylinders prevent a wrong-gas connection. In the Indian and international (ISO) colour scheme, an oxygen cylinder body (and the pin-index system generally) ensures that:
- (A) Oxygen cylinders are coloured black with a white shoulder, and the unique pin configuration for each gas stops an incorrect yoke connection
 - (B) All medical gas cylinders share one colour and the same pin holes
 - (C) The pin index depends on the size of the cylinder, not the gas
 - (D) Nitrous oxide and oxygen use identical pin positions
- Q10.** The schematic shows the neuromuscular junction, with the marker X on the postjunctional receptor. Transmission at this junction depends on:



- (A) Release of noradrenaline acting on beta receptors
- (B) Direct electrical coupling between nerve and muscle
- (C) Dopamine acting on the muscle membrane



(D) Release of acetylcholine that binds nicotinic receptors on the motor end-plate, opening cation channels to depolarise the muscle

Q11. A heat-and-moisture exchanger (HME) placed in the breathing circuit is used to:

- (A) Remove carbon dioxide from the expired gas
- (B) Conserve the patient's own heat and moisture, warming and humidifying the dry inspired anaesthetic gases
- (C) Deliver a fixed concentration of volatile agent
- (D) Measure the tidal volume directly

Complications and Critical Incidents

Q12. Perioperative hypoxaemia can arise by several mechanisms. Which of the following is the *commonest* contributor to a low arterial oxygen under anaesthesia?

- (A) A raised blood glucose level
- (B) Mild anaemia within the normal transfusion threshold
- (C) An isolated rise in body temperature
- (D) Ventilation-perfusion mismatch (including atelectasis and shunt), together with hypoventilation and, on emergence, diffusion hypoxia

Q13. A patient fails to wake up 30 minutes after an uneventful general anaesthetic. The most useful first-line differential for delayed emergence is:

- (A) Simple postoperative nausea
- (B) Residual drug effect (opioids, sedatives or residual neuromuscular block), together with metabolic causes such as hypoglycaemia, hypothermia, hypercarbia and electrolyte disturbance
- (C) Normal recovery that needs no assessment
- (D) A blocked intravenous cannula alone

Critical Care, Resuscitation and Pain



- Q14.** In the adult advanced life support algorithm for a *shockable* rhythm (VF or pulseless VT), adrenaline 1 mg is first given:
- (A) After the third shock, then repeated every 3 to 5 minutes, while high-quality CPR continues with rhythm checks every 2 minutes
 - (B) Immediately before the first shock
 - (C) Only once the patient has regained a pulse
 - (D) Every 30 seconds throughout the arrest
- Q15.** Compared with systemic (intravenous) opioids, epidural opioid analgesia for postoperative pain:
- (A) Provides poorer pain relief and is never used
 - (B) Carries no risk of respiratory depression at all
 - (C) Cannot be combined with a local anaesthetic
 - (D) Can give superior segmental analgesia at a lower total dose, but carries risks of pruritus, urinary retention and delayed respiratory depression



Detailed Solutions**Q1.****Solution**

Concept – the paediatric airway: The infant airway differs from the adult in shape and proportion, which changes airway management.

Step 1 – list the differences: The infant has a **large occiput**, a comparatively large tongue, a **higher (more cephalad) larynx** (around C3-C4 versus C5-C6 in adults) and a **funnel-shaped airway narrowest at the cricoid ring**.

Step 2 – the practical effect: The high anterior larynx and large occiput make the sniffing position and laryngoscopy different, and the cricoid narrowing limits tube size.

Why the other options are wrong:

- A, small head with a low larynx: is the reverse of the truth; the occiput is large and the larynx is high.
- B, narrowest at the vocal cords: describes the adult, where the glottis is the narrowest point.
- D, identical but smaller: ignores the real anatomical differences.

Final Answer: Large occiput, higher larynx, narrowest at the cricoid ⇒ C

Answer: (C) [Go Back to Q1](#)

Q2.**Solution**

Concept – aspiration prophylaxis: When the stomach may not be empty, drugs are used to reduce gastric acidity, volume and reflux.

Step 1 – name the combination: Effective prophylaxis combines an **H₂-receptor blocker (ranitidine)** to reduce acid secretion, a **non-particulate antacid (sodium citrate)** to neutralise residual acid, and a **prokinetic (metoclopramide)** to speed gastric emptying and raise lower-oesophageal tone.

Step 2 – why non-particulate: A clear antacid such as sodium citrate is chosen because aspirated particulate antacids themselves damage the lung.

Why the other options are wrong:

- A, opioid with benzodiazepine: opioids delay gastric emptying and worsen the risk.



- B, bronchodilator with steroid: treats airway disease, not aspiration risk.
- D, relaxant with anticholinesterase: is for neuromuscular block, not prophylaxis.

Final Answer: H2 blocker + antacid + prokinetic $\Rightarrow$ **C**

Answer: (C) [Go Back to Q2](#)

Q3.

Solution

Concept – the Revised Cardiac Risk Index (RCRI): The Lee index estimates the risk of major cardiac complications after non-cardiac surgery.

Step 1 – recall the six factors: One point each for: **ischaemic heart disease**, congestive heart failure, cerebrovascular disease, insulin-treated diabetes, a serum creatinine above 2 mg/dL, and high-risk (intraperitoneal, intrathoracic or suprainguinal vascular) surgery.

Step 2 – use the score: More factors mean a higher predicted rate of cardiac events; a history of ischaemic heart disease is one of the recognised factors, so B is correct.

Why the other options are wrong:

- A, BMI over 30: obesity is not an RCRI factor.
- C, smoking: is a general risk but not counted in the RCRI.
- D, age over 40: age is not one of the six RCRI variables.

Final Answer: A history of ischaemic heart disease $\Rightarrow$ **B**

Answer: (B) [Go Back to Q3](#)

Q4.

Solution

Concept – fentanyl in balanced anaesthesia: Fentanyl is a synthetic, highly lipophilic opioid used to blunt the response to surgical stimulation.

Step 1 – state the potency: Fentanyl is about **100 times as potent as morphine**, with a **rapid onset** and, after a single dose, a **short duration because of redistribution** away from the brain.

Step 2 – the congeners: Alfentanil is less potent but very fast; sufentanil is more potent still; remifentanil is ultra-short acting because plasma esterases hydrolyse



it.

Why the other options are wrong:

- B, one-tenth as potent: is wrong; fentanyl is far more potent than morphine.
- C, equipotent: understates its potency.
- D, 1000 times with a long duration: overstates potency and misstates its short single-dose action.

Final Answer: About 100 times as potent, rapid onset, short duration ⇒ **A**

Answer: (A) [Go Back to Q4](#)

Q5.

Solution

Concept – anaesthetics, cerebral blood flow and ICP: In neuroanaesthesia the aim is to avoid raising intracranial pressure in an already tight cranium.

Step 1 – compare the agents: Volatile agents are cerebral vasodilators that tend to **increase cerebral blood flow and ICP** (while reducing metabolic rate), whereas propofol lowers cerebral metabolic rate, blood flow and ICP.

Step 2 – the coupling: Propofol preserves flow-metabolism coupling, which is why it is favoured for intracranial surgery.

Why the other options are wrong:

- A, all agents equal: is false; their cerebrovascular effects differ.
- C, propofol raises ICP: is the opposite of its true effect.
- D, hyperventilation raises ICP: low CO₂ causes cerebral vasoconstriction and *lowers* ICP.

Final Answer: Volatiles raise, propofol lowers cerebral blood flow and ICP ⇒ **B**

Answer: (B) [Go Back to Q5](#)

Q6.

Solution

Concept – malignant hyperthermia triggers: In a susceptible patient, certain agents provoke uncontrolled sarcoplasmic calcium release.

Step 1 – list the triggers: The triggers are **suxamethonium** and all the **volatile agents** (halothane, sevoflurane, isoflurane, desflurane), so these must be avoided.



Step 2 – the safe agents: A trigger-free technique uses propofol, opioids, benzodiazepines, nitrous oxide, non-depolarising relaxants and local anaesthetics.

Why the other options are wrong:

- B, propofol and remifentanyl: are both safe (non-trigger) agents.
- C, nitrous oxide and rocuronium: are safe, not triggers.
- D, a local anaesthetic block: is safe in malignant hyperthermia.

Final Answer: Suxamethonium and the volatile agents ⇒ A

Answer: (A) [Go Back to Q6](#)

Q7.

Solution

Concept – differential (sequential) nerve block: Nerve fibres are blocked by local anaesthetic in an order set by their size and myelination.

Step 1 – give the sequence: The small, thinly myelinated **autonomic (sympathetic) fibres** are blocked first, then the **sensory fibres** (pain and temperature, then touch), and the large myelinated **motor fibres** are blocked last.

Step 2 – clinical meaning: This is why a spinal block first drops blood pressure (sympathetic block) and produces sensory loss before the legs become weak.

Why the other options are wrong:

- A, motor first: reverses the true order; motor fibres are the most resistant.
- B, sensory before autonomic: is out of order; autonomic block comes first.
- D, all at once: the block is graded, not simultaneous.

Final Answer: Autonomic, then sensory, then motor ⇒ C

Answer: (C) [Go Back to Q7](#)

Q8.

Solution

Concept – ropivacaine versus bupivacaine: Ropivacaine is a single-enantiomer long-acting amide local anaesthetic.

Step 1 – state the advantages: Ropivacaine is **less cardiotoxic** than racemic bupivacaine and produces a relatively greater **sensory than motor block** (differential motor sparing) at low concentrations.



Step 2 – why it matters: The wider cardiovascular safety margin and preserved motor power make it attractive for epidural labour analgesia and ambulatory blocks.

Why the other options are wrong:

- A, much faster and longer than any agent: overstates it; onset and duration are broadly similar to bupivacaine.
- B, not metabolised: it is metabolised in the liver.
- D, safe intravenously in large doses: no local anaesthetic is safe given intravascularly in large doses.

Final Answer: Less cardiotoxic with motor sparing ⇒ C

Answer: (C) [Go Back to Q8](#)

Q9.

Solution

Concept – pin-index system and cylinder colour coding: These are engineering safeguards that stop the wrong gas being connected.

Step 1 – describe them: An **oxygen** cylinder is coloured **black with a white shoulder**, and each gas has a **unique pin-index configuration** on the valve block so that only the correct yoke will seat.

Step 2 – the principle: The pins are gas-specific, not size-specific, so a nitrous oxide cylinder physically cannot connect to an oxygen yoke.

Why the other options are wrong:

- B, one colour and the same pins: would defeat the whole safety system.
- C, depends on cylinder size: the pin index depends on the gas, not the size.
- D, identical pins for N₂O and O₂: they are deliberately different to prevent cross-connection.

Final Answer: Oxygen black with white shoulder; gas-specific pins ⇒ A

Answer: (A) [Go Back to Q9](#)



Q10.

Solution

Concept – the neuromuscular junction: Voluntary muscle is driven by chemical transmission at the motor end-plate.

Step 1 – describe transmission: The nerve action potential releases **acetylcholine**, which crosses the cleft and binds **nicotinic receptors** on the muscle end-plate; these are cation channels that open to depolarise the membrane and trigger contraction.

Step 2 – the receptor: The nicotinic receptor has two alpha subunits; both must bind acetylcholine to open the channel. This is where relaxants act.

Why the other options are wrong:

- A, noradrenaline on beta receptors: is adrenergic sympathetic transmission, not the NMJ.
- B, direct electrical coupling: the junction is chemical, not electrical.
- C, dopamine: is not the neuromuscular transmitter.

Final Answer: Acetylcholine on nicotinic end-plate receptors ⇒ D

Answer: (D) [Go Back to Q10](#)

Q11.

Solution

Concept – the heat-and-moisture exchanger (HME): Anaesthetic gases delivered to the airway are cold and dry, which can dry the mucosa and cool the patient.

Step 1 – state its function: The HME (an ‘artificial nose’) **traps the patient’s own exhaled heat and moisture** and returns them on the next breath, warming and humidifying the dry inspired gas.

Step 2 – added benefit: Many HMEs also incorporate a filter, reducing circuit contamination.

Why the other options are wrong:

- A, remove carbon dioxide: that is the job of the soda-lime absorber, not the HME.
- C, deliver a fixed volatile concentration: that is the vaporiser’s role.
- D, measure tidal volume: that is done by a spirometer or flow sensor.



Final Answer: Conserves heat and moisture, humidifying inspired gas $\Rightarrow$ **B**

Answer: (B) [Go Back to Q11](#)

Q12.

Solution

Concept – perioperative hypoxaemia: A low arterial oxygen under anaesthesia has several overlapping causes.

Step 1 – name the commonest mechanism: Ventilation-perfusion (V/Q) mismatch, including atelectasis and shunt, is the leading cause, compounded by hypoventilation and, on emergence, diffusion hypoxia as nitrous oxide floods the alveoli.

Step 2 – the remedy: Recruitment manoeuvres, PEEP and adequate inspired oxygen correct most of these; supplemental oxygen on emergence prevents diffusion hypoxia.

Why the other options are wrong:

- A, raised glucose: does not cause hypoxaemia.
- B, mild anaemia: lowers oxygen content but not the arterial saturation.
- C, a temperature rise alone: is not a primary cause of hypoxaemia.

Final Answer: V/Q mismatch with hypoventilation and diffusion hypoxia $\Rightarrow$ **D**

Answer: (D) [Go Back to Q12](#)

Q13.

Solution

Concept – delayed emergence from anaesthesia: Failure to wake in the expected time needs a structured differential.

Step 1 – list the main causes: The leading causes are residual drug effect (opioids, sedatives or residual neuromuscular block) and metabolic derangements such as hypoglycaemia, hypothermia, hypercarbia and electrolyte disturbance; rarely a neurological event.

Step 2 – the approach: Check the airway and ventilation, measure glucose and temperature, use a nerve stimulator, and consider reversal agents (naloxone, flumazenil, neostigmine) as indicated.

Why the other options are wrong:



- A, simple nausea: does not explain unconsciousness.
- C, no assessment needed: delayed emergence always needs assessment.
- D, a blocked cannula: does not cause failure to wake.

Final Answer: Residual drug effect plus metabolic causes ⇒ **B**

Answer: (B) [Go Back to Q13](#)

Q14.

Solution

Concept – adult advanced life support (shockable rhythm): The ALS algorithm sets the timing of shocks, CPR and drugs.

Step 1 – place the adrenaline: For VF or pulseless VT, adrenaline 1 mg is given **after the third shock** and then **every 3 to 5 minutes**, while high-quality CPR continues and the rhythm is checked every 2 minutes.

Step 2 – amiodarone: Amiodarone 300 mg is also given after the third shock; both are delivered without interrupting compressions.

Why the other options are wrong:

- B, before the first shock: shocks come first in a shockable rhythm.
- C, only after a pulse returns: adrenaline is given during the arrest, not after.
- D, every 30 seconds: is far too frequent.

Final Answer: After the third shock, then every 3 to 5 minutes ⇒ **A**

Answer: (A) [Go Back to Q14](#)

Q15.

Solution

Concept – epidural versus systemic opioid analgesia: Both routes relieve post-operative pain but differ in effect and side-effects.

Step 1 – state the comparison: Epidural opioid can give **superior segmental analgesia at a lower total dose**, but carries risks of **pruritus, urinary retention and delayed respiratory depression** from rostral spread of the drug in the cerebrospinal fluid.

Step 2 – practical use: Epidural opioids are often combined with a dilute local anaesthetic, and patients are monitored for late respiratory depression.



Why the other options are wrong:

- A, poorer relief and never used: epidural analgesia is effective and widely used.
- B, no respiratory risk: delayed respiratory depression is a recognised hazard.
- C, cannot combine with local anaesthetic: the two are routinely combined.

Final Answer: Superior segmental analgesia but pruritus, retention and delayed respiratory depression $\Rightarrow$

Answer: (D) [Go Back to Q15](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	C	3	B	4	A	5	B
6	A	7	C	8	C	9	A	10	D
11	B	12	D	13	B	14	A	15	D

