INI CET Anaesthesiology

Sample Paper – 4

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. For an average adult, the recommended depth of insertion of an oral endotracheal tube, measured at the incisor teeth, is approximately:

(A) 15 cm

(B) 21 to 23 cm

(C) 30 to 32 cm

(D) 5 to 7 cm

Q2. In a ‘cannot intubate, cannot oxygenate’ (CICO) emergency, after mask ventilation, laryngoscopy and a supraglottic device have all failed to oxygenate the patient, the final rescue step in the difficult airway algorithm is:

(A) A further blind attempt at oral intubation

(B) Awaken the patient and reschedule the surgery

(C) Emergency front-of-neck access (cricothyroidotomy)

(D) Passing a nasogastric tube

Q3. In the preoperative cardiac assessment, a patient who can climb two flights of stairs or walk up a hill without stopping demonstrates a functional capacity of at least:

(A) 1 metabolic equivalent (MET)

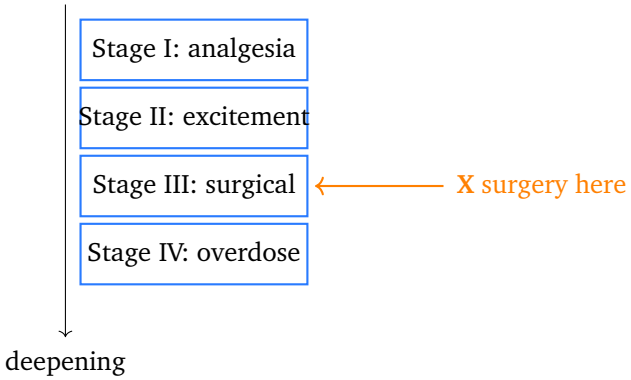
(B) 4 metabolic equivalents (METs)

(C) 0.25 metabolic equivalent (MET)

(D) 100 metabolic equivalents (METs)

General Anaesthesia and Pharmacology

Q4. The schematic below shows the deepening planes of Guedel's classical stages of ether anaesthesia. The stage marked **X**, at which surgery is safely performed, is:



(A) Stage III (surgical anaesthesia)

(B) Stage I (analgesia)

(C) Stage II (excitement or delirium)

(D) Stage IV (medullary paralysis or overdose)

Q5. The inhalational agent of choice for gas (inhalational) induction of anaesthesia in children, because it is non-irritant to the airway, has a pleasant smell and a low blood-gas solubility, is:

(A) Desflurane

(B) Sevoflurane

(C) Isoflurane

(D) Diethyl ether

Q6. The ultra-short-acting opioid metabolised by non-specific plasma and tissue esterases, giving a context-insensitive half-time that stays constant however long the infusion runs, is:

(A) Morphine

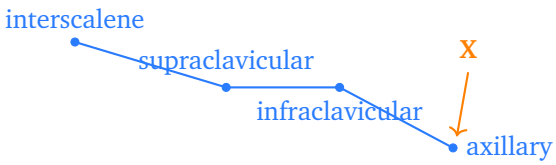
(B) Fentanyl

(C) Methadone

(D) Remifentanil

Regional and Local Anaesthesia

Q7. The four common approaches to the brachial plexus are shown below along the course of the plexus. For surgery of the hand and forearm, the approach that lies furthest from the pleura and therefore carries essentially no risk of pneumothorax is:



(A) Interscalene approach

(B) Supraclavicular approach

(C) Infraclavicular approach

(D) Axillary approach

Q8. The caudal epidural block, performed by injecting local anaesthetic through the sacral hiatus into the epidural space, is most commonly used in children to provide analgesia for:

(A) Craniotomy

(B) Sub-umbilical procedures such as herniotomy and circumcision

(C) Shoulder surgery

(D) Thoracotomy

Monitoring, Fluids and Equipment

Q9. The processed EEG monitor that displays a dimensionless number from 0 to 100 to guide the depth of anaesthesia, with a target range of about 40 to 60 for general anaesthesia, is:

(A) The bispectral index (BIS)

(B) The pulse oximeter

(C) The capnograph

(D) The peripheral nerve stimulator

Q10. Central venous pressure (CVP), measured with the catheter tip in the superior vena cava close to the right atrium, principally reflects:

(A) Right atrial (right heart) filling pressure

(B) Left ventricular contractility

(C) Systemic arterial blood pressure

(D) Intracranial pressure

Q11. Compared with a balanced crystalloid such as Ringer's lactate, large-volume infusion of 0.9% (normal) saline is most likely to cause:

(A) Metabolic alkalosis

(B) Hypochloraemia

(C) Respiratory acidosis

(D) Hyperchloraemic metabolic acidosis

Complications and Critical Incidents

Q12. Intra-operative hypotension develops in a supine anaesthetised patient. After confirming the reading and reducing an excessive depth of anaesthesia, the most appropriate immediate step is to:

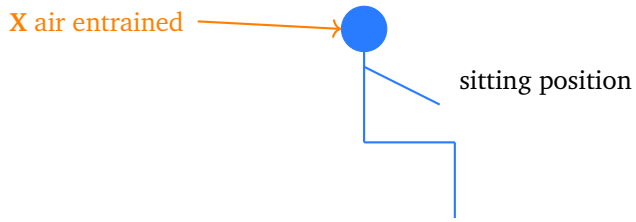
(A) Begin external chest compressions at once

(B) Deepen the anaesthesia further

(C) Give a fluid bolus and a vasopressor such as phenylephrine or ephedrine

(D) Ignore it because the patient is asleep

Q13. The schematic shows a patient undergoing posterior fossa surgery in the sitting position. A sudden fall in end-tidal CO_2 with a classic 'mill-wheel' murmur (**X**) indicates venous air embolism. The most appropriate immediate management is to:



(A) Sit the patient even more upright

(B) Continue the surgery unchanged

(C) Flood the field with saline, give 100% oxygen and place the patient head-down with the left side down (Durant position)

(D) Deliberately inject a bolus of air intravenously

Critical Care, Resuscitation and Pain

Q14. In an unconscious patient who is breathing spontaneously but has airway obstruction from the tongue, and who has no suspected cervical spine injury, the simplest first manoeuvre to open the airway is:

(A) Head tilt and chin lift

(B) Immediate surgical tracheostomy

(C) Applying cricoid pressure

(D) A precordial thump

Q15. The principle of multimodal analgesia for postoperative pain is best described as:

(A) Using a single strong opioid at its maximum dose

(B) Withholding all analgesia to avoid side effects

(C) Combining drugs and techniques with different mechanisms, for example paracetamol, NSAIDs and a regional block, to improve pain relief and reduce the opioid requirement

(D) Giving general anaesthesia for all postoperative pain

Detailed Solutions

Q1.

Solution

Concept – endotracheal tube depth and size: The tube must sit with its tip in the mid-trachea, above the carina.

Step 1 – recall the adult depth: For an average adult, the oral tube is fixed at about **21 to 23 cm** at the incisors (roughly 21 cm in women and 23 cm in men).

Step 2 – the paediatric formulae: In children over one year, the internal diameter is estimated as (age/4) + 4 mm and the oral depth as (age/2) + 12 cm, so sizing scales with age.

Why the other options are wrong:

- A, 15 cm: is too shallow and risks the tube lying in the larynx or slipping out.
- C, 30 to 32 cm: is too deep and would push the tube into a main bronchus.
- D, 5 to 7 cm: is far too shallow for an adult airway.

Final Answer: 21 to 23 cm at the incisors $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q1

Q2.

Solution

Concept – the difficult airway algorithm: The algorithm gives an ordered set of rescue steps when the airway cannot be secured.

Step 1 – identify the CICO endpoint: Once mask ventilation, laryngoscopy and a supraglottic device have all failed to oxygenate the patient, the situation is 'cannot intubate, cannot oxygenate' and is immediately life-threatening.

Step 2 – the final rescue: The last step is **emergency front-of-neck access (cricothyroidotomy)**, creating an opening through the cricothyroid membrane to oxygenate the patient.

Why the other options are wrong:

- A, another blind intubation attempt: wastes time and worsens hypoxia.
- B, awakening the patient: is not possible once the patient cannot be oxygenated.
- D, a nasogastric tube: does nothing for the airway.

Final Answer: Emergency cricothyroidotomy ⇒ C

Answer: (C) Go Back to Q2

Q3.

Solution

Concept – metabolic equivalents (METs): One MET is the resting oxygen consumption, and functional capacity is expressed as a multiple of it.

Step 1 – interpret the activity: Climbing two flights of stairs or walking up a hill corresponds to a capacity of at least **4 METs**.

Step 2 – why the threshold matters: A capacity of 4 METs or more indicates adequate cardiac reserve, so further cardiac testing is usually unnecessary before non-cardiac surgery.

Why the other options are wrong:

- A, 1 MET: is only the resting state, such as sitting quietly.
- C, 0.25 MET: is below the resting requirement and not physiological.
- D, 100 METs: is far beyond even elite athletic performance.

Final Answer: At least 4 METs ⇒ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept – Guedel's stages of anaesthesia: Guedel described four deepening stages of ether anaesthesia based on physical signs.

Step 1 – locate the surgical plane: Surgery is safely performed in **Stage III (surgical anaesthesia)**, marked **X**, with regular breathing, a central fixed pupil and loss of most reflexes.

Step 2 – the full sequence: Stage I is analgesia, Stage II is excitement (with risk of vomiting and laryngospasm), Stage III is surgical anaesthesia and Stage IV is medullary paralysis or overdose.

Why the other options are wrong:

- B, Stage I: gives analgesia but the patient is still conscious.
- C, Stage II: is dangerous, with excitement and irregular breathing.

- D, Stage IV: is overdose, with respiratory and cardiovascular collapse.

Final Answer: Stage III (surgical anaesthesia) ⇒ A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – inhalational induction in children: Gas induction needs an agent that is pleasant and does not irritate the airway.

Step 1 – match the profile: Sevoflurane is non-irritant, has a pleasant smell and a low blood-gas solubility, giving a smooth and rapid inhalational induction, so it is the agent of choice in children.

Step 2 – why solubility matters: Its low blood-gas partition coefficient allows the alveolar concentration to rise quickly, speeding the loss of consciousness.

Why the other options are wrong:

- A, desflurane: is pungent and causes coughing, laryngospasm and breath-holding, so it is unsuitable for induction.
- C, isoflurane: is also irritant to the airway.
- D, diethyl ether: is irritant, slow and inflammable, and is obsolete.

Final Answer: Sevoflurane ⇒ B

Answer: (B) Go Back to Q5

Q6.

Solution

Concept – remifentanil: Remifentanil is a potent ultra-short-acting opioid designed for infusion.

Step 1 – read the profile: Remifentanil is broken down by **non-specific plasma and tissue esterases**, so its context-insensitive half-time stays about 3 to 5 minutes however long the infusion runs.

Step 2 – the clinical consequence: Its clearance is independent of the liver and kidneys and does not accumulate, allowing rapid titration and prompt recovery.

Why the other options are wrong:

- A, morphine: is long-acting and has an active metabolite that accumulates

in renal failure.

- B, fentanyl: accumulates with prolonged infusion, so its context-sensitive half-time lengthens.
- C, methadone: has a very long and variable half-life.

Final Answer: Remifentanil $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – approaches to the brachial plexus: The plexus can be blocked at several levels, each with different reach and risks.

Step 1 – pick the safe distal approach: The **axillary approach** lies in the axilla, well away from the pleura, so it carries essentially no risk of pneumothorax and suits hand and forearm surgery.

Step 2 – match approach to site: Interscalene suits shoulder surgery (but spares the ulnar border), supraclavicular blocks the whole arm, and infraclavicular reaches the cords below the clavicle.

Why the other options are wrong:

- A, interscalene: often misses the lower trunk and risks phrenic nerve block.
- B, supraclavicular: lies close to the pleural dome and has the highest pneumothorax risk.
- C, infraclavicular: is deeper and still near the pleura.

Final Answer: Axillary approach $\Rightarrow$ D

Answer: (D) Go Back to Q7

Q8.

Solution

Concept – the caudal epidural block: Local anaesthetic is injected through the sacral hiatus into the caudal (lowest) part of the epidural space.

Step 1 – match the block to the site: A caudal block spreads to the sacral and lower lumbar segments, providing analgesia for **sub-umbilical procedures such as herniotomy and circumcision** in children.

Step 2 – why it is popular in children: The sacral hiatus is easy to palpate in

infants, making the block simple, safe and reliable for lower abdominal, perineal and lower limb surgery.

Why the other options are wrong:

- A, craniotomy: is far above the block's reach.
- C, shoulder surgery: needs a brachial plexus block.
- D, thoracotomy: requires a thoracic epidural or paravertebral block.

Final Answer: Sub-umbilical surgery (herniotomy, circumcision) $\Rightarrow$ B

Answer: (B) Go Back to Q8

Q9.

Solution

Concept – the bispectral index (BIS): BIS processes the frontal EEG into a single depth-of-anaesthesia number.

Step 1 – read the scale: The **bispectral index (BIS)** runs from 0 (isoelectric EEG) to 100 (fully awake), and a value of about **40 to 60** indicates adequate general anaesthesia.

Step 2 – the use: Keeping BIS in range helps titrate the anaesthetic and reduce the risk of awareness or of excessive depth.

Why the other options are wrong:

- B, pulse oximeter: measures oxygen saturation, not anaesthetic depth.
- C, capnograph: measures exhaled carbon dioxide.
- D, nerve stimulator: assesses neuromuscular blockade.

Final Answer: The bispectral index (BIS) $\Rightarrow$ A

Answer: (A) Go Back to Q9

Q10.

Solution

Concept – central venous pressure (CVP): CVP is the pressure in the great veins near the right atrium.

Step 1 – state what it reflects: With the catheter tip in the superior vena cava close to the right atrium, CVP reflects the **right atrial (right heart) filling pressure**, an estimate of right-sided preload.

Step 2 – interpretation: A low CVP suggests hypovolaemia, while a high CVP may reflect fluid overload, right heart failure or raised intrathoracic pressure; trends matter more than single readings.

Why the other options are wrong:

- B, left ventricular contractility: is not measured directly by CVP.
- C, arterial pressure: is measured by an arterial line or cuff.
- D, intracranial pressure: needs a dedicated intracranial monitor.

Final Answer: Right atrial filling pressure ⇒ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept – normal saline versus balanced crystalloids: 0.9% saline has a much higher chloride content than plasma.

Step 1 – trace the acid-base effect: Large volumes of 0.9% saline load the plasma with chloride, lowering the strong ion difference and producing a **hyperchloraemic metabolic acidosis**.

Step 2 – the balanced alternative: Ringer's lactate has a chloride concentration close to plasma and a bicarbonate precursor (lactate), so it avoids this acidosis.

Why the other options are wrong:

- A, metabolic alkalosis: is the opposite of the acidosis saline causes.
- B, hypochloraemia: saline raises chloride, it does not lower it.
- C, respiratory acidosis: is a ventilation problem, not a fluid effect.

Final Answer: Hyperchloraemic metabolic acidosis ⇒ D

Answer: (D) Go Back to Q11

Q12.

Solution

Concept – perioperative hypotension: Anaesthetic agents cause vasodilatation and reduced venous return, so hypotension is common and needs prompt correction.

Step 1 – confirm and treat the cause: After confirming the reading and lighten-

ing an excessive depth of anaesthesia, the appropriate step is to **give a fluid bolus and a vasopressor** such as phenylephrine or ephedrine.

Step 2 – the rationale: Fluid restores preload while the vasopressor restores vascular tone (and, with ephedrine, cardiac output), quickly raising the blood pressure.

Why the other options are wrong:

- A, chest compressions: are for cardiac arrest, not simple hypotension with a pulse.
- B, deepening anaesthesia: would worsen the vasodilatation and hypotension.
- D, ignoring it: risks organ hypoperfusion and harm.

Final Answer: Fluid bolus plus a vasopressor ⇒ C

Answer: (C) Go Back to Q12

Q13.

Solution

Concept – venous air embolism (VAE): In the sitting position the surgical site is above the heart, so open veins can entrain air.

Step 1 – recognise the signs: A sudden fall in end-tidal CO_2 with a 'mill-wheel' murmur (**X**) points to air entering the venous circulation and obstructing the right heart.

Step 2 – the immediate management: Alert the surgeon to **flood the field with saline**, give **100% oxygen**, stop nitrous oxide, and place the patient **head-down with the left side down (the Durant position)** to trap air in the right atrium away from the outflow tract; aspirate air through a central line if present.

Why the other options are wrong:

- A, sitting more upright: would worsen air entrainment.
- B, continuing unchanged: ignores a life-threatening event.
- D, injecting air: is dangerous and nonsensical.

Final Answer: Flood the field, 100% oxygen, Durant position ⇒ C

Answer: (C) Go Back to Q13

Q14.

Solution

Concept – basic airway opening manoeuvres: In the unconscious patient the tongue falls back and obstructs the pharynx.

Step 1 – choose the first manoeuvre: With no suspected cervical spine injury, the simplest first step is the **head tilt and chin lift**, which lifts the tongue off the posterior pharyngeal wall.

Step 2 – the escalation: If the spine is at risk a jaw thrust is used instead, and an oropharyngeal or nasopharyngeal airway can be added to keep the passage open.

Why the other options are wrong:

- B, surgical tracheostomy: is not a first-line simple manoeuvre.
- C, cricoid pressure: is to prevent aspiration, not to open the airway.
- D, a precordial thump: is for a witnessed shockable cardiac arrest, not airway obstruction.

Final Answer: Head tilt and chin lift $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q14

Q15.

Solution

Concept – multimodal analgesia: Multimodal analgesia combines several methods that act at different points in the pain pathway.

Step 1 – state the principle: It means **combining drugs and techniques with different mechanisms**, for example paracetamol, NSAIDs and a regional block, to improve pain relief while reducing the opioid requirement.

Step 2 – the benefit: Because each agent works differently, smaller doses of each are needed, giving better analgesia with fewer opioid-related side effects such as nausea and respiratory depression.

Why the other options are wrong:

- A, a single maximal opioid: is the opposite of a multimodal, opioid-sparing approach.
- B, withholding analgesia: leaves the patient in pain.
- D, general anaesthesia for all pain: is neither practical nor safe for postoperative analgesia.

Final Answer: Combine different mechanisms to spare opioids ⇒ C

Answer: (C) Go Back to Q15

Answer Key

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