

INI CET Anaesthesiology

Sample Paper – 5

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. On preoperative airway examination, which single finding best predicts a **difficult intubation**?

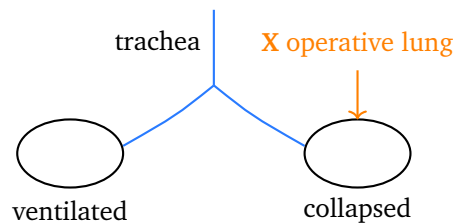
- (A) An inter-incisor mouth opening of less than 3 cm with limited neck extension
- (B) A thyromental distance greater than 7 cm
- (C) Mallampati class I with a full set of healthy teeth
- (D) Ability to protrude the lower jaw beyond the upper incisors

Q2. The single most important perioperative measure for a patient with known **obstructive sleep apnoea** is:



- (A) Continuing CPAP therapy and using opioid-sparing analgesia with careful postoperative respiratory monitoring
- (B) Routine deep extubation while the patient is still deeply anaesthetised
- (C) Liberal use of long-acting opioids for analgesia
- (D) Avoiding regional anaesthesia in every case

Q3. A **double-lumen endotracheal tube** (shown below) is placed for thoracic surgery mainly in order to:



- (A) Reduce the dose of induction agent required
- (B) Deliver a higher fraction of inspired oxygen than a single-lumen tube
- (C) Allow one-lung ventilation by isolating and deflating the operative lung while ventilating the other
- (D) Measure the cardiac output directly

General Anaesthesia and Pharmacology

Q4. Which intravenous induction agent is a **barbiturate** that is contraindicated in acute intermittent porphyria and can cause severe tissue and arterial injury if injected intra-arterially?

- (A) Propofol
- (B) Etomidate
- (C) Thiopental sodium
- (D) Ketamine

Q5. Which statement best distinguishes **total intravenous anaesthesia (TIVA)** from inhalational maintenance?

- (A) TIVA always requires a volatile agent to maintain depth



- (B) Inhalational maintenance carries no risk of postoperative nausea
- (C) TIVA cannot be titrated and offers no control over anaesthetic depth
- (D) TIVA maintains anaesthesia with a continuous propofol infusion (usually with an opioid) and avoids volatile agents, typically giving less postoperative nausea

Q6. Dexmedetomidine provides sedation and analgesia through which mechanism?

- (A) Non-competitive NMDA receptor antagonism
- (B) Potentiation of the GABA-A receptor
- (C) Selective alpha-2 adrenoceptor agonism, giving sedation without significant respiratory depression
- (D) Mu-opioid receptor agonism

Regional and Local Anaesthesia

Q7. Compared with lignocaine, **bupivacaine** is more dangerous in overdose mainly because it:

- (A) Has a much shorter duration of action
- (B) Binds cardiac sodium channels avidly and dissociates slowly, causing refractory ventricular arrhythmias and cardiac arrest
- (C) Is unable to cross the placenta
- (D) Has no effect on the myocardium at any dose

Q8. The **transversus abdominis plane (TAP) block** deposits local anaesthetic to relieve pain arising from the:

- (A) Cervical spine
- (B) Knee joint
- (C) Distribution of the facial nerve
- (D) Anterior abdominal wall, by blocking the thoracolumbar nerves between the internal oblique and transversus abdominis muscles

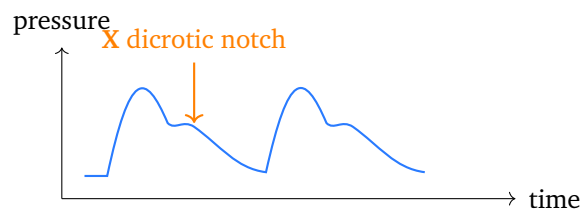


Monitoring, Fluids and Equipment

Q9. In a circle breathing system, **soda lime** is used to:

- (A) Chemically absorb exhaled carbon dioxide, allowing safe low-fresh-gas-flow rebreathing
- (B) Add moisture only, with no effect on carbon dioxide
- (C) Generate oxygen by electrolysis
- (D) Scavenge nitrous oxide from the theatre atmosphere

Q10. The invasive arterial pressure waveform below is recorded from an arterial line. The **dicrotic notch** marked **X** represents:



- (A) Closure of the aortic valve
- (B) Opening of the mitral valve
- (C) The peak of atrial contraction
- (D) The onset of ventricular diastole before any ejection has occurred

Q11. In an otherwise stable, previously healthy 70 kg adult (blood volume about 70 mL/kg), the generally accepted haemoglobin **transfusion trigger** is a value below:

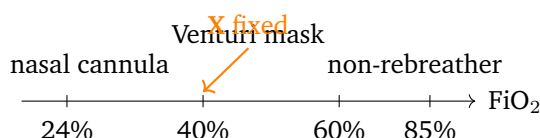
- (A) 12 g/dL
- (B) 10 g/dL
- (C) 9 g/dL
- (D) 7 g/dL

Complications and Critical Incidents

- Q12.** Which combination correctly pairs a recognised risk factor for **postoperative nausea and vomiting** with an appropriate prophylactic drug?
- (A) Female sex, non-smoker and a history of motion sickness; prophylaxis with ondansetron and dexamethasone
 - (B) Male smoker with no risk factors; needs routine triple antiemetic therapy
 - (C) Use of regional rather than general anaesthesia; strongly increases the risk
 - (D) Opioid-sparing analgesia; increases the risk of vomiting
- Q13.** At the end of a **nitrous oxide** anaesthetic, diffusion hypoxia can occur because:
- (A) Nitrous oxide is slowly absorbed and remains in the blood for many hours
 - (B) Oxygen is consumed faster than nitrous oxide is released
 - (C) Large volumes of nitrous oxide rapidly diffuse out into the alveoli and dilute alveolar oxygen, so 100% oxygen should be given on emergence
 - (D) Carbon dioxide production stops abruptly at the end of the case

Critical Care, Resuscitation and Pain

- Q14.** On the oxygen-delivery scale below, which statement about **oxygen delivery devices** is correct?



- (A) A simple nasal cannula reliably delivers 60% oxygen
- (B) A Venturi mask delivers a fixed, predictable fraction of inspired oxygen regardless of the patient's breathing pattern
- (C) A non-rebreather mask delivers only about 24% oxygen



- (D) Nasal cannulae deliver a fixed FiO_2 that is independent of the breathing pattern

Q15. Regarding **epidural analgesia for labour**, which statement is correct?

- (A) It reliably shortens the first stage of labour
- (B) It provides effective segmental pain relief but can cause maternal hypotension and, rarely, a post-dural-puncture headache if the dura is breached
- (C) It abolishes all sensation and motor power completely as a standard effect
- (D) An accidental dural puncture never causes a headache



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

Concept – the preoperative airway examination: Several bedside findings together predict a difficult laryngoscopy and intubation.

Step 1 – identify the worrying finding: A restricted **mouth opening of less than 3 cm** (about two finger-breadths) together with **limited neck extension** makes laryngoscope insertion and alignment of the airway axes hard, so it best predicts a difficult intubation.

Step 2 – the reassuring findings: A long thyromental distance, a low Mallampati class and good jaw protrusion all point towards an *easy* airway.

Why the other options are wrong:

- B, thyromental distance over 7 cm: a longer distance is reassuring, not predictive of difficulty.
- C, Mallampati class I: predicts an easy view, not a difficult one.
- D, good jaw protrusion: is a favourable sign of a mobile mandible.

Final Answer: Mouth opening under 3 cm with limited neck extension ⇒ A

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

Q2.**Solution**

Concept – perioperative care in obstructive sleep apnoea (OSA): OSA patients are prone to airway obstruction and to a heightened sensitivity to sedatives and opioids.

Step 1 – name the key measure: **Continuing CPAP therapy** and using **opioid-sparing analgesia** with careful postoperative respiratory monitoring reduces the risk of postoperative airway obstruction and hypoxaemia.

Step 2 – the principle: Multimodal, opioid-sparing analgesia (paracetamol, NSAIDs, regional blocks) limits respiratory depression, while CPAP splints the upper airway open.

Why the other options are wrong:

- B, routine deep extubation: risks obstruction in an unprotected airway; awake extubation is safer in OSA.



- C, liberal long-acting opioids: worsen respiratory depression and airway collapse.
- D, avoiding all regional anaesthesia: regional techniques are in fact useful because they spare opioids.

Final Answer: Continue CPAP with opioid-sparing analgesia and monitoring ⇒

A

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

Q3.

Solution

Concept – the double-lumen tube and one-lung ventilation: Thoracic surgery often needs the operative lung to be still and collapsed while the other lung keeps the patient oxygenated.

Step 1 – state the purpose: A **double-lumen tube** separates the two main bronchi so that one lung can be deflated and isolated (**one-lung ventilation**) while the dependent lung is ventilated.

Step 2 – the benefit: This gives the surgeon a quiet, deflated operative lung and prevents contamination or spillage between the two sides.

Why the other options are wrong:

- A, reducing induction dose: the tube has no effect on drug dosing.
- B, higher inspired oxygen: FiO_2 depends on the fresh gas, not the tube design.
- D, measuring cardiac output: needs a cardiac output monitor, not an airway tube.

Final Answer: Allow one-lung ventilation by isolating the operative lung ⇒ C

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

Q4.

Solution

Concept – thiopental sodium: Thiopental is a short-acting barbiturate induction agent with important contraindications.

Step 1 – match the description: **Thiopental sodium** is a **barbiturate**, is contraindicated in acute intermittent porphyria (it can precipitate an acute attack),



and its highly alkaline solution causes severe tissue and arterial injury if injected intra-arterially.

Step 2 – the mechanism note: Barbiturates induce the enzyme ALA synthase, worsening porphyria; the high pH of the solution causes vasospasm and thrombosis in an artery.

Why the other options are wrong:

- A, propofol: is a phenol derivative, not a barbiturate, and is safe in porphyria.
- B, etomidate: is an imidazole that suppresses adrenal steroidogenesis.
- D, ketamine: is a phencyclidine derivative acting at the NMDA receptor.

Final Answer: Thiopental sodium $\Rightarrow$

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

Q5.

Solution

Concept – TIVA versus inhalational maintenance: Anaesthesia can be maintained either with an intravenous infusion or with a volatile agent.

Step 1 – define TIVA: Total intravenous anaesthesia maintains depth with a **continuous propofol infusion** (usually combined with an opioid such as remifentanyl) and **avoids volatile agents**, and it typically causes **less postoperative nausea**.

Step 2 – the contrast: Inhalational maintenance uses a volatile agent (for example sevoflurane), which is easy to titrate against end-tidal concentration but is more emetogenic.

Why the other options are wrong:

- A, TIVA needing a volatile agent: contradicts the definition, TIVA avoids volatiles.
- B, no nausea risk with volatiles: volatile agents are in fact a major cause of nausea.
- C, TIVA cannot be titrated: target-controlled infusions titrate propofol precisely.

Final Answer: Continuous propofol infusion, no volatile, less nausea $\Rightarrow$

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



Q6.

Solution

Concept – dexmedetomidine: Dexmedetomidine is a sedative and analgesic used in theatre and intensive care.

Step 1 – state the mechanism: It is a **selective alpha-2 adrenoceptor agonist**, producing sedation and analgesia **without significant respiratory depression**.

Step 2 – the clinical effects: It gives an arousable, cooperative sedation but can cause bradycardia and hypotension through its central sympatholytic action.

Why the other options are wrong:

- A, NMDA antagonism: is the mechanism of ketamine.
- B, GABA-A potentiation: is the mechanism of propofol and benzodiazepines.
- D, mu-opioid agonism: is the mechanism of morphine and fentanyl.

Final Answer: Selective alpha-2 adrenoceptor agonism ⇒ C

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

Q7.

Solution

Concept – bupivacaine cardiotoxicity: Bupivacaine is a potent, long-acting amide local anaesthetic with a narrow safety margin for the heart.

Step 1 – explain the toxicity: Bupivacaine **binds cardiac sodium channels avidly and dissociates slowly** ("fast in, slow out"), so an overdose causes **refractory ventricular arrhythmias and cardiac arrest** that are hard to resuscitate.

Step 2 – the contrast with lignocaine: Lignocaine binds and releases from the sodium channel quickly, so it is much less cardiotoxic at equivalent doses.

Why the other options are wrong:

- A, shorter duration: bupivacaine is actually longer acting than lignocaine.
- C, cannot cross the placenta: it does cross, though it is highly protein bound.
- D, no myocardial effect: it has marked myocardial effects, which is the whole problem.

Final Answer: Avid, slowly dissociating sodium-channel block causing arrhythmias ⇒ B

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



Q8.

Solution

Concept – the transversus abdominis plane (TAP) block: The TAP block is a fascial-plane block for somatic pain of the abdominal wall.

Step 1 – state the target: Local anaesthetic is deposited in the plane **between the internal oblique and transversus abdominis muscles**, bathing the thoracolumbar (T6-L1) nerves that supply the **anterior abdominal wall**.

Step 2 – the use: It provides analgesia for abdominal wall incisions, for example after caesarean section or laparotomy, as part of a multimodal plan.

Why the other options are wrong:

- A, cervical spine; B, knee joint; C, facial nerve: are anatomically remote from the abdominal wall and are not the TAP target.

Final Answer: Anterior abdominal wall via the thoracolumbar nerves ⇒ D

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

Q9.

Solution

Concept – soda lime in a circle system: The circle breathing system recycles exhaled gas, which requires the carbon dioxide to be removed.

Step 1 – state the function: Soda lime chemically absorbs the exhaled carbon dioxide, so the gas can be rebreathed safely and a **low fresh-gas flow** can be used.

Step 2 – the chemistry: Carbon dioxide reacts with the hydroxides in soda lime to form carbonate, water and heat; an indicator dye changes colour when the absorbent is exhausted.

Why the other options are wrong:

- B, adds moisture only: it does humidify a little, but its main job is carbon dioxide removal.
- C, generates oxygen: soda lime does not produce oxygen.
- D, scavenges nitrous oxide: theatre scavenging is a separate system; soda lime does not remove nitrous oxide.

Final Answer: Chemically absorbs exhaled carbon dioxide ⇒ A



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

Q10.

Solution

Concept – the invasive arterial waveform: Direct arterial monitoring displays a pressure trace with a characteristic notch on its downstroke.

Step 1 – interpret the notch: The **dicrotic notch** (marked X) marks the **closure of the aortic valve**, which separates ventricular systole from diastole.

Step 2 – read the rest of the trace: The steep upstroke is systolic ejection, the peak is the systolic pressure, and the trough before the next beat is the diastolic pressure.

Why the other options are wrong:

- B, mitral valve opening: is a venous or echocardiographic event, not shown on the arterial trace.
- C, atrial contraction: contributes to the venous, not the arterial, waveform.
- D, onset of diastole before ejection: ejection has already occurred by the time of the notch.

Final Answer: Closure of the aortic valve $\Rightarrow$ A

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

Q11.

Solution

Concept – the transfusion trigger: The decision to transfuse balances the risks of anaemia against the risks of blood products.

Step 1 – recall the threshold: In a stable, previously healthy adult, a restrictive strategy transfuses only when the haemoglobin falls **below about 7 g/dL**.

Step 2 – the reasoning: Large trials show a restrictive trigger of 7 g/dL is as safe as, or safer than, a liberal one; a higher trigger (around 8 g/dL) is used only for patients with active cardiac disease.

Why the other options are wrong:

- A, 12 g/dL; B, 10 g/dL; C, 9 g/dL: these liberal triggers lead to unnecessary transfusion in an otherwise stable patient.



Final Answer: Below 7 g/dL $\Rightarrow$

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

Q12.

Solution

Concept – postoperative nausea and vomiting (PONV): The Apfel score lists four main risk factors, and prophylaxis uses drugs from different classes.

Step 1 – match risk factor to prophylaxis: Female sex, non-smoking status and a history of motion sickness (or PONV) are recognised risk factors; appropriate prophylaxis combines **ondansetron** (a 5-HT₃ antagonist) with **dexamethasone** (a steroid).

Step 2 – the principle: The more risk factors present, the more antiemetic classes are combined, along with opioid-sparing analgesia and, where suitable, TIVA with propofol.

Why the other options are wrong:

- B, male smoker with no risk factors: is a low-risk patient who does not need triple therapy.
- C, regional anaesthesia: reduces, rather than increases, PONV.
- D, opioid-sparing analgesia: lowers the risk of vomiting, it does not raise it.

Final Answer: Female non-smoker with motion sickness; ondansetron plus dexamethasone $\Rightarrow$

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

Q13.

Solution

Concept – diffusion hypoxia: Nitrous oxide is very insoluble, so it moves rapidly between blood and alveoli.

Step 1 – explain the mechanism: When nitrous oxide is stopped, **large volumes diffuse rapidly out of the blood into the alveoli**, diluting the alveolar oxygen and lowering the alveolar oxygen tension.

Step 2 – the prevention: Giving **100% oxygen** for the first few minutes on emergence washes out the nitrous oxide and prevents hypoxaemia.

Why the other options are wrong:



- A, slowly absorbed: nitrous oxide is poorly soluble and is cleared quickly, not slowly.
- B, oxygen consumed faster: the problem is dilution of alveolar oxygen, not increased consumption.
- D, carbon dioxide production stops: metabolism and carbon dioxide production continue.

Final Answer: Rapid nitrous oxide outflow dilutes alveolar oxygen $\Rightarrow$ **C**

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

Q14.

Solution

Concept – oxygen delivery devices: Devices are classed as variable-performance (FiO_2 depends on breathing) or fixed-performance (FiO_2 set by the device).

Step 1 – identify the fixed-performance device: A **Venturi mask** entrains air in a fixed ratio, delivering a **fixed, predictable fraction of inspired oxygen** (for example 24%, 28%, 40%) regardless of the patient's breathing pattern.

Step 2 – the variable devices: Nasal cannulae and simple masks are variable-performance, so their true FiO_2 changes with the patient's inspiratory flow; a non-rebreather delivers a high but not precisely fixed FiO_2 .

Why the other options are wrong:

- A, nasal cannula at 60%: a cannula delivers only about 24 to 40%.
- C, non-rebreather at 24%: a non-rebreather delivers a high FiO_2 , around 85%.
- D, nasal cannula with fixed FiO_2 : cannulae are variable-performance, not fixed.

Final Answer: The Venturi mask gives a fixed, predictable $\text{FiO}_2 \Rightarrow$ **B**

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



Q15.

Solution

Concept – epidural analgesia for labour: A low-dose epidural provides segmental analgesia while allowing the mother to remain awake and cooperative.

Step 1 – state the correct point: Labour epidurals give **effective segmental pain relief** but can cause **maternal hypotension** (from sympathetic block) and, rarely, a **post-dural-puncture headache** if the dura is accidentally breached.

Step 2 – the practical points: A fluid preload and vigilant blood-pressure monitoring manage the hypotension; a recognised dural puncture may later need an epidural blood patch.

Why the other options are wrong:

- A, shortens the first stage: an epidural does not reliably shorten labour.
- C, abolishes all sensation and motor power: modern low-dose mixtures aim to preserve some movement.
- D, dural puncture never causes headache: an accidental dural puncture is a well-known cause of headache.

Final Answer: Segmental relief, with hypotension and possible post-dural-puncture headache ⇒ **B**

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



Answer Key

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

