INI CET Anaesthesiology

Sample Paper – 7

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 bedside **LEMON** assessment (Look externally, Evaluate the 3-3-2 rule, Mallampati, Obstruction, Neck mobility) is used before induction to predict:

(A) A difficult airway, that is difficult laryngoscopy and tracheal intubation

(B) The depth of anaesthesia

(C) The risk of postoperative nausea and vomiting

(D) The adequacy of a spinal block

Q2. At the end of anaesthesia, which of the following is a criterion for *safe* tracheal extubation and emergence?

(A) The patient obeys commands, has adequate spontaneous tidal volumes and has regained protective airway reflexes

(B) The end-tidal carbon dioxide has fallen below 20 mmHg

(C) A residual train-of-four ratio below 0.5

(D) Deep neuromuscular blockade is deliberately maintained

Q3. A patient on long-term warfarin is listed for elective major surgery. The correct perioperative management is to:

(A) Continue warfarin unchanged through the operation

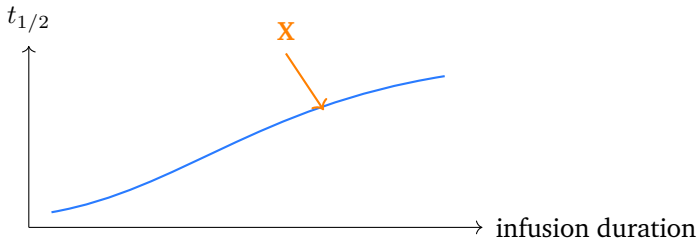
(B) Stop warfarin about 5 days before surgery and bridge high thrombotic-risk patients with low-molecular-weight heparin, aiming for an INR below 1.5

(C) Give intravenous vitamin K routinely to every patient on the morning of surgery

(D) Stop warfarin only on the morning of surgery

General Anaesthesia and Pharmacology

Q4. The curve below plots the time for the plasma concentration to halve (marked **X**) against the duration of a continuous intravenous infusion. This relationship, the *context-sensitive half-time*, is best defined as:



(A) The time for the plasma concentration to halve after a single bolus dose

(B) The elimination half-life measured in vitro

(C) The time for the plasma concentration to fall by 50% after stopping a continuous infusion, which lengthens with the duration of that infusion

(D) A fixed constant that is independent of how long the drug was infused

Q5. A patient remains apnoeic and fully paralysed for several hours after a single normal dose of suxamethonium. A **low dibucaine number** on testing confirms:

(A) Malignant hyperthermia

(B) Pseudocholinesterase (plasma cholinesterase) deficiency causing prolonged suxamethonium apnoea

(C) A phase I block that neostigmine will reverse

(D) An anaphylactic reaction to the drug

Q6. Which of the following *decreases* the minimum alveolar concentration (MAC) of a volatile anaesthetic agent?

(A) Chronic alcohol use

(B) Young age (infancy)

(C) Hyperthermia

(D) Increasing age, hypothermia and pregnancy

Regional and Local Anaesthesia

Q7. Regarding additives mixed with local anaesthetic solutions, which statement is correct?

(A) Adrenaline shortens the duration of the block

(B) Sodium bicarbonate slows the onset of the block

(C) Opioids added to a neuraxial local anaesthetic give no analgesic benefit

(D) Adrenaline prolongs the block and reduces systemic absorption, bicarbonate speeds the onset, and opioids enhance analgesia

Q8. Which of the following is a recognised contraindication to central neuraxial (spinal or epidural) blockade?

(A) Patient refusal, coagulopathy, raised intracranial pressure or infection at the injection site

(B) Well-controlled hypertension

(C) A history of previous uneventful spinal anaesthesia

(D) Mild, stable asthma

Monitoring, Fluids and Equipment

Q9. A modern variable-bypass vaporiser delivers a stable set concentration of volatile agent because it:

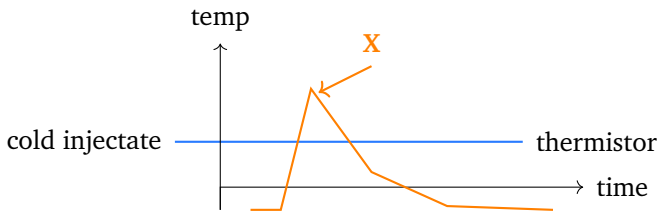
(A) Heats the liquid agent to a fixed high temperature

(B) Automatically compensates for changes in temperature and fresh gas flow so the output concentration stays constant

(C) Relies on the anaesthetist recalculating the output by hand at each flow change

(D) Adds a fixed volume of liquid agent to every breath

Q10. The thermodilution method of measuring cardiac output, shown schematically below, derives flow from the temperature signal marked **X**. It works by:



(A) Recording the temperature-time curve after injecting cold fluid into the right atrium and applying the Stewart-Hamilton principle

(B) Measuring the pressure in the radial artery alone

(C) Estimating stroke volume directly from a chest X-ray

(D) Reading the oxygen saturation of peripheral blood

Q11. In the crystalloid versus colloid debate for fluid resuscitation, which statement is correct?

(A) Colloids have been proven to reduce mortality compared with crystalloids

(B) Crystalloids remain in the intravascular space far longer than colloids

(C) Balanced crystalloids are first-line for most resuscitation; colloids give only transient volume expansion and carry added cost, anaphylaxis risk and, for starches, renal harm

(D) Hydroxyethyl starch is the recommended first-line fluid in sepsis

Complications and Critical Incidents

Q12. During anaesthesia a patient develops a regular narrow-complex tachycardia at 170 per minute with a falling blood pressure and poor perfusion. The immediate management is to:

(A) Observe alone, as it will settle spontaneously

(B) Treat any reversible cause and, because the patient is unstable, deliver synchronised DC cardioversion

(C) Withhold all drugs, since adenosine is absolutely contraindicated

(D) Give an immediate unsynchronised defibrillation shock

Q13. Regarding injuries caused by patient positioning under anaesthesia, which statement is correct?

(A) Corneal abrasion is best prevented by leaving the eyes open throughout

(B) The radial nerve at the elbow is the nerve most often injured

(C) Positioning injuries never occur when the operation is short

(D) Corneal abrasion is the commonest ocular injury, and the ulnar nerve at the elbow and the common peroneal nerve at the fibular head are especially vulnerable to pressure

Critical Care, Resuscitation and Pain

Q14. After the return of spontaneous circulation following a cardiac arrest, appropriate post-resuscitation care includes:

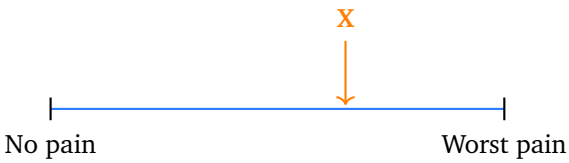
(A) Deliberately maintaining hyperthermia to protect the brain

(B) Targeting an oxygen saturation of 100% with maximal inspired oxygen indefinitely

(C) Targeted temperature management (avoiding fever, holding a controlled temperature of about 32 to 36 degrees C), controlled oxygenation and treating the underlying cause

(D) Immediate extubation regardless of the conscious level

Q15. The 100 mm line below, on which the patient marks a point (**X**) between the two ends, is a *visual analogue scale*. It is used to:



(A) Measure the depth of anaesthesia

(B) Grade the degree of neuromuscular blockade

(C) Let the patient rate pain intensity along a line from no pain to worst pain, quantifying pain much as the numerical rating scale does

(D) Estimate the volume of surgical blood loss

Detailed Solutions

Q1.

Solution

Concept – the LEMON airway assessment: LEMON is a quick bedside screen for a potentially difficult airway.

Step 1 – expand the mnemonic: **L**ook externally, **E**valuate the 3-3-2 rule, **M**allampati, **O**bstruction and **N**eck mobility.

Step 2 – what it predicts: Taken together these items predict a **difficult airway**, meaning difficult laryngoscopy and tracheal intubation, so that help and equipment can be prepared before induction.

Why the other options are wrong:

- B, depth of anaesthesia: is judged clinically or by processed EEG, not by LEMON.
- C, postoperative nausea: is predicted by scores such as Apfel, not LEMON.
- D, adequacy of a spinal block: is tested by sensory and motor levels, not the airway.

Final Answer: Predicts a difficult airway $\Rightarrow$ A

Answer: (A) Go Back to Q1

Q2.

Solution

Concept – safe extubation and emergence: Extubation is only safe once the patient can protect and maintain the airway unaided.

Step 1 – list the criteria: The patient should **obey commands**, breathe with **adequate spontaneous tidal volumes**, have **recovered protective airway reflexes** and show full reversal of neuromuscular blockade (a train-of-four ratio above 0.9).

Step 2 – apply them: Option A states exactly these conditions, so it is the safe criterion.

Why the other options are wrong:

- B, an end-tidal CO_2 below 20 mmHg: signals hyperventilation, not readiness to extubate.
- C, a train-of-four ratio below 0.5: indicates significant residual paralysis and is unsafe.

- D, deep block maintained: is the opposite of what is required for extubation.

Final Answer: Obeys commands, adequate breathing, reflexes returned ⇒ A

Answer: (A) Go Back to Q2

Q3.

Solution

Concept – perioperative warfarin management: The aim is to balance bleeding risk from surgery against the thrombotic risk of stopping the anticoagulant.

Step 1 – the plan for major surgery: Stop warfarin about 5 days beforehand so the INR falls, and **bridge high thrombotic-risk** patients (for example a mechanical mitral valve or recent venous thromboembolism) with **low-molecular-weight heparin**.

Step 2 – the target: Aim for an **INR below 1.5** on the day of surgery, restarting warfarin (and heparin cover) postoperatively once haemostasis allows.

Why the other options are wrong:

- A, continue unchanged: leaves the patient dangerously anticoagulated for major surgery.
- C, routine vitamin K for all: causes warfarin resistance later and is not needed electively.
- D, stop only on the morning: does not give the INR time to fall.

Final Answer: Stop 5 days before, bridge high-risk, INR below 1.5 ⇒ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept – context-sensitive half-time: This describes how quickly a drug level falls after a maintained infusion is stopped.

Step 1 – state the definition: It is the **time for the plasma concentration to fall by 50% after stopping a continuous infusion**, and crucially it **depends on the duration** of that infusion.

Step 2 – read the curve: As the infusion runs longer the peripheral compartments fill, so the half-time (marked **X**) rises, which is why the curve climbs with duration. Propofol has a short context-sensitive half-time, giving prompt recovery.

Why the other options are wrong:

- A, halving after a single bolus: describes distribution after a bolus, not an infusion.
- B, elimination half-life in vitro: is a fixed pharmacokinetic constant, not context-sensitive.
- D, a fixed constant: is wrong, because the whole point is that it varies with infusion time.

Final Answer: 50% fall after stopping an infusion, duration-dependent ⇒ C

Answer: (C) Go Back to Q4

Q5.

Solution

Concept – pseudocholinesterase deficiency: Suxamethonium is normally hydrolysed rapidly by plasma (pseudo)cholinesterase.

Step 1 – interpret the picture: Prolonged apnoea and paralysis after a normal dose, with a **low dibucaine number**, indicate an **abnormal or deficient plasma cholinesterase** that cannot break the drug down.

Step 2 – the dibucaine number: Dibucaine inhibits about 80% of normal enzyme (number around 80) but only about 20% of the atypical enzyme (number around 20), so a low number confirms the atypical variant.

Why the other options are wrong:

- A, malignant hyperthermia: presents with rising CO_2, rigidity and fever, not isolated apnoea.
- C, phase I block reversed by neostigmine: neostigmine can worsen, not reverse, this block.
- D, anaphylaxis: causes rash, bronchospasm and collapse, not quiet prolonged paralysis.

Final Answer: Pseudocholinesterase deficiency ⇒ B

Answer: (B) Go Back to Q5

Q6.

Solution

Concept – factors that alter MAC: MAC measures the potency of a volatile agent and shifts with the patient's physiology.

Step 1 – recall what lowers MAC: MAC **falls** with **increasing age**, **hypothermia**, **pregnancy**, opioids and other sedatives, and hyponatraemia.

Step 2 – what raises MAC: MAC **rises** in infancy and young age, with hyperthermia, chronic alcohol use, and hypernatraemia.

Why the other options are wrong:

- A, chronic alcohol use: raises MAC.
- B, young age (infancy): raises MAC (it peaks in infancy).
- C, hyperthermia: raises MAC.

Final Answer: Increasing age, hypothermia and pregnancy lower MAC $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – additives to local anaesthetics: Additives are used to prolong, hasten or deepen a local anaesthetic block.

Step 1 – take each additive: Adrenaline causes vasoconstriction, which **prolongs the block and reduces systemic absorption**; **bicarbonate** raises the pH so more drug is unionised and the **onset is faster**; **opioids** added to neuraxial blocks give additional analgesia.

Step 2 – pick the correct combination: Only option D states all three of these effects correctly.

Why the other options are wrong:

- A, adrenaline shortens the block: it prolongs it.
- B, bicarbonate slows onset: it speeds onset.
- C, opioids give no benefit: neuraxial opioids clearly enhance analgesia.

Final Answer: Adrenaline prolongs, bicarbonate hastens, opioids add analgesia $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q7

Q8.

Solution

Concept – contraindications to central neuraxial block: Spinal and epidural anaesthesia carry specific risks that some conditions make unacceptable.

Step 1 – list them: Patient refusal, **coagulopathy** (risk of spinal or epidural haematoma), **raised intracranial pressure** (risk of coning after dural puncture) and **infection at the injection site** (risk of introducing infection) are all recognised contraindications.

Step 2 – apply it: Option A groups these correctly.

Why the other options are wrong:

- B, well-controlled hypertension: is not a contraindication.
- C, previous uneventful spinal: is reassuring, not a contraindication.
- D, mild stable asthma: does not preclude a neuraxial block.

Final Answer: Refusal, coagulopathy, raised ICP, local sepsis $\Rightarrow$ $\boxed{A}$

Answer: (A) Go Back to Q8

Q9.

Solution

Concept – the variable-bypass vaporiser: It splits the fresh gas flow so a controlled fraction is fully saturated with volatile agent.

Step 1 – the compensation: A modern vaporiser **automatically compensates for temperature and fresh gas flow**, using a temperature-sensitive bimetallic strip and a fixed splitting ratio, so the dialled output concentration stays constant.

Step 2 – why this matters: As liquid agent evaporates it cools, which would reduce vapour pressure; the temperature compensation corrects for this so delivery does not drift.

Why the other options are wrong:

- A, heating to a fixed high temperature: describes a measured-flow (heated) vaporiser such as the older desflurane unit, not the standard variable-bypass type.
- C, manual recalculation: defeats the purpose of automatic compensation.
- D, a fixed volume of liquid per breath: is not how a vaporiser works.

Final Answer: Automatic temperature and flow compensation $\Rightarrow$ $\boxed{B}$

Answer: (B) Go Back to Q9

Q10.

Solution

Concept – thermodilution cardiac output: This classic method uses a pulmonary artery (Swan-Ganz) catheter.

Step 1 – the technique: A known volume of **cold fluid is injected into the right atrium**; a distal **thermistor records the temperature-time curve** (marked **X**) as the cooled blood passes.

Step 2 – the calculation: The area under this temperature-time curve is inversely proportional to flow by the **Stewart-Hamilton principle**, giving the cardiac output. The oesophageal Doppler is a less invasive alternative that measures descending aortic flow velocity.

Why the other options are wrong:

- B, radial artery pressure alone: gives blood pressure, not directly cardiac output.
- C, chest X-ray: cannot measure stroke volume.
- D, peripheral oxygen saturation: reflects oxygenation, not flow.

Final Answer: Cold injectate, temperature curve, Stewart-Hamilton $\Rightarrow$ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept – crystalloid versus colloid: The debate concerns which fluid best restores intravascular volume with the least harm.

Step 1 – the current position: Balanced crystalloids (for example Hartmann's) are **first-line** for most resuscitation. **Colloids** give a slightly larger, but only transient, volume expansion and add cost, a risk of anaphylaxis and, for starches, kidney injury.

Step 2 – the evidence: Large trials found no mortality benefit for colloids, and hydroxyethyl starch was linked to renal harm and excess death in the critically ill.

Why the other options are wrong:

- A, colloids proven to reduce mortality: no such benefit has been shown.

- B, crystalloids stay longer: colloids stay intravascular longer, not crystalloids.
- D, starch first-line in sepsis: starches are avoided in sepsis because of renal harm.

Final Answer: Balanced crystalloid first-line; colloids transient and riskier ⇒ C

Answer: (C) Go Back to Q11

Q12.

Solution

Concept – the unstable perioperative tachyarrhythmia: Management hinges on whether the patient shows adverse (unstable) features.

Step 1 – recognise instability: A rate of 170 per minute with a **falling blood pressure and poor perfusion** defines an unstable tachyarrhythmia.

Step 2 – the treatment: Treat any reversible cause (hypoxia, light anaesthesia, electrolytes) and, because the patient is unstable, deliver **synchronised DC cardioversion** in line with peri-arrest guidance.

Why the other options are wrong:

- A, observe alone: is unsafe in an unstable patient.
- C, adenosine absolutely contraindicated: adenosine is in fact useful for a stable regular narrow-complex tachycardia, so the blanket statement is false.
- D, unsynchronised defibrillation: is for a pulseless or shockable arrest, not a perfusing tachycardia with a pulse; the shock must be synchronised.

Final Answer: Treat the cause and give synchronised cardioversion ⇒ B

Answer: (B) Go Back to Q12

Q13.

Solution

Concept – positioning injuries under anaesthesia: An anaesthetised patient cannot feel or correct pressure, so vulnerable structures must be protected.

Step 1 – the ocular injury: Corneal abrasion is the commonest ocular injury; the eyes are taped closed and may be lubricated to prevent drying and abrasion.

Step 2 – the nerve injuries: The **ulnar nerve at the elbow** and the **common peroneal nerve at the fibular head** are especially prone to pressure injury and must be padded and kept off hard edges.

Why the other options are wrong:

- A, leaving the eyes open: increases drying and abrasion; the eyes should be closed.
- B, the radial nerve at the elbow: the ulnar nerve, not the radial, is the classic elbow injury.
- C, never in short cases: injuries can occur even in short procedures if positioning is poor.

Final Answer: Corneal abrasion commonest; ulnar and peroneal nerves at risk $\Rightarrow$ D

Answer: (D) Go Back to Q13

Q14.

Solution

Concept – post-resuscitation care: Care after return of spontaneous circulation aims to protect the brain and other organs.

Step 1 – temperature and oxygen: Use **targeted temperature management**: actively **avoid fever** and hold a **controlled temperature of about 32 to 36 degrees C**, and titrate oxygen to a normal saturation rather than giving excess oxygen.

Step 2 – the wider bundle: Maintain controlled oxygenation and ventilation, support the circulation, and **treat the underlying cause** (for example coronary reperfusion after a myocardial infarction).

Why the other options are wrong:

- A, deliberate hyperthermia: fever worsens neurological outcome and must be avoided.
- B, 100% saturation with maximal oxygen indefinitely: hyperoxia is harmful; oxygen is titrated to a normal target.
- D, immediate extubation: is inappropriate while the patient is comatose and unstable.

Final Answer: Targeted temperature management and treating the cause $\Rightarrow$ C

Answer: (C) Go Back to Q14

Q15.

Solution

Concept – the visual analogue scale for pain: Pain is subjective, so simple self-report scales are used to quantify it.

Step 1 – read the scale: On the **visual analogue scale** the patient marks a point (**X**) along a 100 mm line running from *no pain* to *worst pain*, and the distance from zero gives the score.

Step 2 – the related tool: The **numerical rating scale** asks the patient to rate pain from 0 to 10; both give a reproducible number to guide and monitor analgesia.

Why the other options are wrong:

- A, depth of anaesthesia: is not measured by a pain scale.
- B, neuromuscular blockade: is measured with a nerve stimulator.
- D, surgical blood loss: is estimated by swab weighing and suction volumes, not a pain scale.

Final Answer: Lets the patient rate pain intensity, like the numerical rating scale $\Rightarrow$ C

Answer: (C) Go Back to Q15

Answer Key

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