

INI CET Forensic Medicine

Sample Paper – 9

Duration: 14 Minutes

Maximum Marks: 15

Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Forensic Medicine and Toxicology content of **INI CET** (Institutes of National Importance Combined Entrance Test) conducted by AIIMS New Delhi.
- The **15-question** length matches the number of Forensic Medicine 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 on thanatology, injuries, asphyxia, jurisprudence and toxicology.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

Thanatology

- Q1.** During the apnoea test used to confirm brainstem death, the diagnosis is supported when the arterial carbon dioxide tension (PaCO_2) rises above which threshold with no spontaneous respiratory effort?
- (A) 40 mmHg
(B) 50 mmHg
(C) 60 mmHg
(D) 80 mmHg
- Q2.** Under the Transplantation of Human Organs and Tissues Act, before organs can be retrieved, brainstem death must be certified by the board of



medical experts on how many separate examinations?

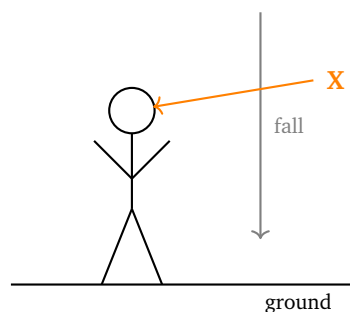
- (A) Two examinations, at least 6 hours apart
- (B) A single examination
- (C) Three examinations, 24 hours apart
- (D) Four examinations, 48 hours apart

Q3. Which one of the following reflexes must be ABSENT to diagnose brain-stem death, since the remaining three are spinal reflexes that may persist?

- (A) Knee jerk
- (B) Plantar reflex
- (C) Corneal reflex
- (D) Abdominal reflex

Mechanical Injuries

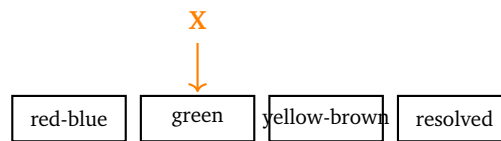
Q4. The schematic shows a person who has fallen from a height and landed on the feet, so a vertical compression force is transmitted up the axial skeleton. The characteristic fracture at the skull base marked X, a fracture encircling the foramen magnum, is a:



- (A) Colles fracture
- (B) Pott's fracture
- (C) Monteggia fracture
- (D) Ring fracture of the base of the skull



- Q5.** The timeline shows the colour changes a bruise (contusion) passes through as it ages. When the bruise reaches the stage marked **X**, a green colour, its approximate age is:



- (A) Within the first 24 hours
- (B) About 4 to 7 days old
- (C) Fresh, within minutes
- (D) More than 3 weeks old

Asphyxial Deaths

- Q6.** Choking, as a mechanism of asphyxial death, refers specifically to:
- (A) External pressure on the neck by a ligature
 - (B) Pressure on the chest and abdomen preventing respiratory movement
 - (C) Obstruction of the internal airway by a foreign body (e.g. a bolus of food)
 - (D) Submersion of the mouth and nostrils in water
- Q7.** Burking, the method of homicidal asphyxia named after Burke and Hare, is produced by:
- (A) Ligature strangulation alone
 - (B) Drowning the victim in a bath
 - (C) Simultaneous smothering (closing the nose and mouth) and traumatic asphyxia (kneeling or sitting on the chest)
 - (D) Complete hanging with a fixed knot

Forensic Identification and Medical Jurisprudence



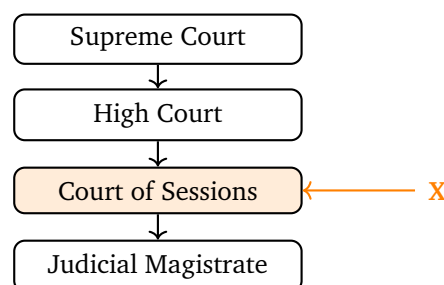
Q8. A doctor who deposes in court and gives an opinion drawn from his professional and scientific knowledge, rather than from something he personally saw happen, is classified as a/an:

- (A) Expert witness
- (B) Common (lay) witness
- (C) Hostile witness
- (D) Chance witness

Q9. A witness who, by his conduct in the witness box, shows that he is not desirous of telling the truth and turns against the party that summoned him, is termed a:

- (A) Hostile witness
- (B) Expert witness
- (C) Common witness
- (D) Eye witness

Q10. The flow box shows the hierarchy of criminal courts. The court marked X, the highest criminal court subordinate to the High Court, which can pass any sentence authorised by law including the death sentence (subject to confirmation by the High Court), is the:



- (A) Court of Judicial Magistrate of the Second Class
- (B) Court of Judicial Magistrate of the First Class
- (C) Court of Metropolitan Magistrate
- (D) Court of Sessions



General Toxicology and Corrosive Poisons

- Q11.** Copper sulphate (blue vitriol) poisoning, an irritant metallic poison, classically produces vomiting of which colour, together with a metallic taste?
- (A) Coffee-ground brown
 - (B) Blue or blue-green
 - (C) Bright red
 - (D) Jet black
- Q12.** The specific chelating antidote used in copper sulphate poisoning is:
- (A) Atropine
 - (B) Naloxone
 - (C) Pralidoxime
 - (D) D-penicillamine

Specific Poisons

- Q13.** The specific antidote for paracetamol (acetaminophen) overdose, which acts by replenishing hepatic glutathione stores, is:
- (A) Desferrioxamine
 - (B) N-acetylcysteine
 - (C) Sodium bicarbonate
 - (D) Deferiprone
- Q14.** Salicylate (aspirin) overdose classically produces which acid-base disturbance in its early phase, owing to direct stimulation of the respiratory centre?
- (A) Respiratory alkalosis
 - (B) Respiratory acidosis
 - (C) Isolated metabolic alkalosis



(D) No acid-base disturbance

Q15. The specific chelating antidote for acute iron poisoning is:

- (A) N-acetylcysteine
- (B) Desferrioxamine
- (C) D-penicillamine
- (D) Atropine



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

Concept – the apnoea test: Brainstem death is confirmed only when the respiratory centre fails to respond to a strong carbon dioxide stimulus.

Step 1 – the method: The patient is pre-oxygenated, disconnected from the ventilator, and observed for any breathing effort.

Step 2 – the threshold: The test is positive (supporting brainstem death) when the **PaCO₂ rises above 60 mmHg** (or by more than 20 mmHg above baseline) with no spontaneous respiration.

Why the other options are wrong:

- A and B, 40 and 50 mmHg: near or only slightly above normal, an insufficient stimulus to prove the centre is dead.
- D, 80 mmHg: higher than required and dangerous to reach; 60 mmHg is the accepted threshold.

Final Answer: PaCO₂ above 60 mmHg ⇒ **C**

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

Q2.**Solution**

Concept – certifying brainstem death for donation: The law demands repeat testing to exclude error before organs are retrieved.

Step 1 – the legal requirement: The Transplantation of Human Organs and Tissues Act requires certification by a board of medical experts on **two separate examinations**.

Step 2 – the interval: The two sets of tests are performed at least **6 hours apart** to confirm the findings are consistent and irreversible.

Why the other options are wrong:

- B, a single examination: unsafe, as a single set of tests can be misleading.
- C and D, three or four examinations at 24 or 48 hours: not what the Act specifies; two tests six hours apart is the rule.

Final Answer: Two examinations, 6 hours apart ⇒ **A**



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

Q3.

Solution

Concept – brainstem versus spinal reflexes: Brainstem death abolishes brainstem reflexes, but spinal reflexes may persist.

Step 1 – identify the brainstem reflex: The **corneal reflex** is a brainstem reflex (afferent V, efferent VII) and must be absent in brainstem death.

Step 2 – the contrast: Knee jerk, plantar and abdominal reflexes are mediated at the spinal cord level and can still be elicited.

Why the other options are wrong:

- A, knee jerk: a spinal stretch reflex, may persist.
- B, plantar reflex: a spinal reflex, may persist.
- D, abdominal reflex: a superficial spinal reflex, may persist.

Final Answer: Corneal reflex $\Rightarrow$

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

Q4.

Solution

Concept – fall from a height on to the feet: The force runs up the legs and spine to the skull base.

Step 1 – identify X: When a person lands on the feet, the vertical thrust drives the vertebral column against the skull base, producing a **ring fracture** encircling the foramen magnum.

Step 2 – associated injuries: Calcaneal (heel bone) fractures and compression fractures of the spine accompany it.

Why the other options are wrong:

- A, Colles fracture: lower end of the radius, from a fall on the outstretched hand.
- B, Pott's fracture: ankle fracture-dislocation, not the skull base.
- C, Monteggia fracture: ulnar shaft fracture with radial head dislocation, a forearm injury.



Final Answer: Ring fracture of the base of the skull $\Rightarrow$ **D**

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

Q5.

Solution

Concept – ageing a bruise by colour: The breakdown of haemoglobin gives a predictable colour sequence.

Step 1 – read the timeline: A fresh bruise is red then blue-black; it turns **green** as biliverdin forms, then yellow-brown (bilirubin/haematoidin), then resolves.

Step 2 – date the green stage: The green colour marked X appears at roughly **4 to 7 days** of age.

Why the other options are wrong:

- A, within 24 hours: the bruise is still red or blue, not green.
- C, within minutes: a fresh contusion is red, not green.
- D, more than 3 weeks: by then the bruise has usually resolved.

Final Answer: About 4 to 7 days old $\Rightarrow$ **B**

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

Q6.

Solution

Concept – mechanisms of asphyxia: Each term is defined by where and how the airway is blocked.

Step 1 – define choking: **Choking** is obstruction of the internal airway (larynx, trachea or bronchi) by a foreign body such as a bolus of food.

Step 2 – the mechanism: The blockage prevents air reaching the lungs, causing asphyxia.

Why the other options are wrong:

- A, ligature pressure on the neck: that is strangulation, not choking.
- B, pressure on the chest: that is traumatic asphyxia.
- D, submersion in water: that is drowning.

Final Answer: Internal airway obstruction by a foreign body $\Rightarrow$ **C**



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

Q7.

Solution

Concept – Burking: Burke and Hare killed victims in a way that left few external marks.

Step 1 – define the method: Burking combines **smothering** (closing the nose and mouth) with **traumatic asphyxia** produced by kneeling or sitting on the chest.

Step 2 – the intent: The combination causes rapid death while leaving the body relatively unmarked, useful to the original body-snatchers.

Why the other options are wrong:

- A, ligature strangulation alone: a single mechanism, not Burking.
- B, drowning: a separate form of asphyxia.
- D, hanging: suspension by a ligature, not the Burke and Hare method.

Final Answer: Smothering plus traumatic asphyxia ⇒

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

Q8.

Solution

Concept – classes of witness: The law separates those who state facts from those who give opinions.

Step 1 – classify the doctor: A doctor giving an opinion from professional and scientific knowledge is an **expert witness**.

Step 2 – the contrast: An expert may draw inferences and conclusions; a common witness may only state what he perceived.

Why the other options are wrong:

- B, common (lay) witness: testifies only to facts he saw or heard, not opinions.
- C, hostile witness: one who turns against the party that called him.
- D, chance witness: one who happens to be present at the scene by chance.

Final Answer: Expert witness ⇒

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



Q9.

Solution

Concept – the hostile witness: A witness may betray the party that summoned him.

Step 1 – define the term: A **hostile witness** is one who, from his conduct in the box, shows he is not desirous of telling the truth and turns against the party who called him.

Step 2 – the effect: The court may permit that party to cross-examine its own witness.

Why the other options are wrong:

- B, expert witness: gives an opinion from special knowledge.
- C, common witness: states facts he perceived.
- D, eye witness: one who directly saw the event.

Final Answer: Hostile witness $\Rightarrow$ A

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

Q10.

Solution

Concept – hierarchy of criminal courts: Sentencing power increases up the ladder.

Step 1 – identify X: Below the High Court, the highest criminal court is the **Court of Sessions**, which can pass any sentence including death (subject to High Court confirmation).

Step 2 – the confirmation rule: A death sentence passed by the Sessions Court must be confirmed by the High Court before it can be carried out.

Why the other options are wrong:

- A, Second Class Magistrate: limited to about 1 year and a small fine.
- B, First Class Magistrate: up to about 3 years imprisonment.
- C, Metropolitan Magistrate: powers similar to a First Class Magistrate, not death.

Final Answer: Court of Sessions $\Rightarrow$ D

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



Q11.

Solution

Concept – copper sulphate poisoning: Blue vitriol is a coloured irritant metallic poison.

Step 1 – the presenting feature: Ingestion causes a metallic taste and **blue or blue-green vomiting**, from the dissolved copper salt.

Step 2 – other features: Abdominal pain, haemolysis and, in severe cases, renal failure may follow.

Why the other options are wrong:

- A, coffee-ground brown: suggests altered blood (upper GI bleed), not copper.
- C, bright red: fresh blood, not the copper salt colour.
- D, jet black: seen with iron or melaena, not copper sulphate.

Final Answer: Blue or blue-green vomit ⇒ B

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

Q12.

Solution

Concept – antidote for copper: Copper is a heavy metal removed by chelation.

Step 1 – name the antidote: **D-penicillamine** chelates copper and promotes its urinary excretion.

Step 2 – alternatives: BAL (dimercaprol) may also be used; supportive care and gastric decontamination are added.

Why the other options are wrong:

- A, atropine: antidote for organophosphates and carbamates.
- B, naloxone: antidote for opioids.
- C, pralidoxime: reactivates cholinesterase in organophosphate poisoning.

Final Answer: D-penicillamine ⇒ D

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



Q13.

Solution

Concept – paracetamol overdose: Toxicity comes from a reactive metabolite that depletes glutathione.

Step 1 – name the antidote: N-acetylcysteine replenishes hepatic glutathione, allowing the toxic metabolite (NAPQI) to be detoxified.

Step 2 – timing: It is most effective when given within about 8 hours of ingestion, guided by the treatment nomogram.

Why the other options are wrong:

- A, desferrioxamine: chelating antidote for iron.
- C, sodium bicarbonate: used to alkalinise urine in salicylate poisoning, not paracetamol.
- D, deferiprone: an oral iron chelator, not for paracetamol.

Final Answer: N-acetylcysteine $\Rightarrow$ **B**

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

Q14.

Solution

Concept – salicylate (aspirin) toxicity: Salicylate first stimulates the respiratory centre.

Step 1 – the early disturbance: Direct stimulation of the medullary respiratory centre causes hyperventilation, blowing off CO_2 and producing an early **respiratory alkalosis**.

Step 2 – the later picture: Uncoupling of oxidative phosphorylation then adds a high anion gap metabolic acidosis, giving a mixed disturbance.

Why the other options are wrong:

- B, respiratory acidosis: the opposite of the early hyperventilation.
- C, isolated metabolic alkalosis: not the pattern; metabolic acidosis develops, not alkalosis.
- D, no acid-base change: incorrect, salicylate markedly disturbs acid-base balance.

Final Answer: Respiratory alkalosis $\Rightarrow$ **A**



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

Q15.

Solution

Concept – acute iron poisoning: Free iron is removed by a specific chelator.

Step 1 – name the antidote: Desferrioxamine chelates free iron to form ferrioxamine, which is excreted in the urine (giving a vin-rose colour).

Step 2 – indication: It is used in severe iron overdose with high serum iron or systemic toxicity.

Why the other options are wrong:

- A, N-acetylcysteine: antidote for paracetamol.
- C, D-penicillamine: chelator for copper and lead, not the first choice for iron.
- D, atropine: antidote for organophosphates.

Final Answer: Desferrioxamine ⇒

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



Answer Key

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

