INI CET Forensic Medicine

Sample Paper – 7

Duration: 14 Minutes **Maximum Marks: 15**

Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Forensic Medicine 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, whether it concerns time since death, injuries, asphyxia, medical jurisprudence or toxicology.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

Thanatology

Q1. An average, well-cooked meal normally leaves the stomach completely within about how long, a fact used to estimate the time since death from the state of the stomach contents?

(A) 4 to 6 hours

(B) 12 to 14 hours

(C) 20 to 24 hours

(D) 30 minutes

Q2. In forensic entomology, the first insects to reach and lay eggs on a fresh

corpse, whose larval (maggot) growth helps estimate the post-mortem interval, are the:

(A) Ants

(B) Beetles

(C) Blowflies (Calliphoridae)

(D) Honey bees

Q3. Active maggots (fly larvae) on a body are used to estimate the minimum time since death because:

(A) Maggots appear within a few minutes of death

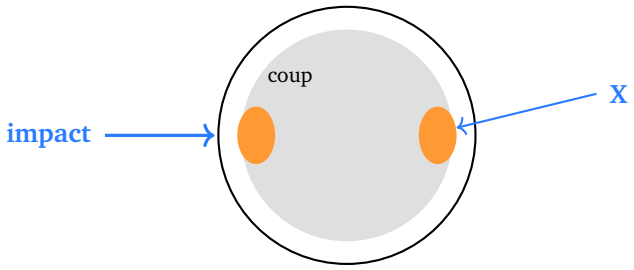
(B) The age of the oldest, largest maggots gives the minimum period since the eggs were laid

(C) Maggots appear only after the body is fully skeletonised

(D) Maggot length is unrelated to the time since egg-laying

Mechanical Injuries

Q4. In the skull diagram, a fall bruises the brain both directly beneath the point of impact and on the opposite pole (marked **X**). The contusion on the side opposite to the impact is called a:



(A) Coup injury

(B) Contrecoup injury

(C) Fracture contusion

(D) Herniation contusion

Q5. A young man struck on the temple is briefly unconscious, wakes and talks normally through a lucid interval, then rapidly deteriorates and dies. This classic course, caused by tearing of the middle meningeal artery, indicates:

(A) Subdural haemorrhage

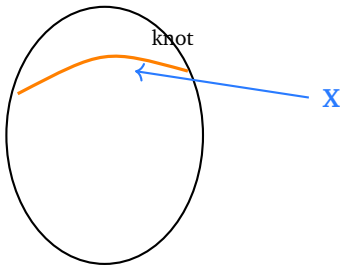
(B) Subarachnoid haemorrhage

(C) Extradural (epidural) haemorrhage

(D) Diffuse axonal injury

Asphyxial Deaths

Q6. In the neck diagram of a person found suspended, the ligature mark (marked **X**) is characteristically:



(A) High up on the neck, oblique, and non-continuous (incomplete)

(B) Low on the neck, horizontal, and continuous all round

(C) Multiple horizontal marks at the level of the thyroid

(D) Completely absent

Q7. A dribble of saliva running down from the angle of the mouth on a suspended body is a sign that strongly favours:

(A) Ligature strangulation

(B) Manual strangulation (throttling)

(C) Ante-mortem hanging

(D) Drowning

Forensic Identification and Medical Jurisprudence

Q8. Under Indian law, the minimum age at which a person can give valid consent for a general physical examination carried out for their own benefit is:

(A) 18 years

(B) 12 years

(C) 21 years

(D) 7 years

Q9. A patient who walks into a clinic, sits down and rolls up a sleeve so the doctor can record the blood pressure is giving:

(A) Implied consent

(B) Express written consent

(C) Informed consent for a major operation

(D) Proxy (substitute) consent

Q10. An unconscious road-accident victim needs immediate life-saving surgery, but no relative can be contacted. The correct course for the doctor is to:

(A) Proceed at once under the doctrine of necessity, without waiting for consent

(B) Wait until a relative arrives to sign the consent form

(C) Refuse to treat for want of valid consent

(D) Take written consent from any bystander

General Toxicology and Corrosive Poisons

Q11. While treating a suspected case of homicidal poisoning, an important medico-legal duty of the doctor is to:

(A) Destroy the vomit so the ward is not contaminated

(B) Discharge the patient as quickly as possible

(C) Ignore the container or source of the poison

(D) Preserve the vomit, stomach wash and other samples for chemical analysis

Q12. Desferrioxamine is the specific chelating agent used as an antidote in poisoning by:

(A) Lead

(B) Arsenic

(C) Copper

(D) Iron

Specific Poisons

Q13. Cyanide causes very rapid death mainly by:

(A) Blocking sodium channels in nerves

(B) Inhibiting cytochrome oxidase and halting cellular (aerobic) respiration

(C) Binding haemoglobin to form carboxyhaemoglobin

(D) Producing only methaemoglobinaemia

Q14. The cherry-red colour of the skin, lips and blood in carbon monoxide poisoning is due to the formation of:

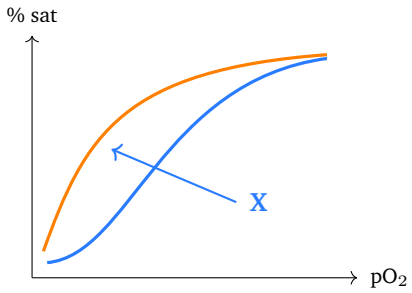
(A) Methaemoglobin

(B) Sulphaemoglobin

(C) Carboxyhaemoglobin

(D) Cyanmethaemoglobin

Q15. The graph shows the oxygen-haemoglobin dissociation curve. Carbon monoxide binds haemoglobin so tightly that the curve shifts as marked **X** and oxygen is not released to tissues. Its affinity for haemoglobin is about how many times that of oxygen?



(A) About 2 times

(B) About 10 times

(C) About 50 times

(D) About 200 to 250 times

Detailed Solutions

Q1.

Solution

Concept – stomach contents and time since death: The state and amount of food in the stomach gives a rough guide to the interval between the last meal and death.

Step 1 – normal emptying time: An ordinary well-cooked meal leaves the stomach completely in about **4 to 6 hours**.

Step 2 – apply it: A stomach full of recognisable food suggests death within a couple of hours of eating; an empty stomach suggests death several hours after the last meal.

Why the other options are wrong:

- B and C, 12 to 14 and 20 to 24 hours: far longer than the true gastric emptying time.
- D, 30 minutes: too short; digestion has barely begun.

Final Answer: 4 to 6 hours $\Rightarrow$ A

Answer: (A) Go Back to Q1

Q2.

Solution

Concept – forensic entomology: Insects colonise a dead body in a fixed order (insect succession), and the first wave sets the clock.

Step 1 – name the first arrivals: Blowflies (Calliphoridae) are attracted within minutes to hours and lay eggs at natural orifices and wounds.

Step 2 – how it dates death: Rearing the maggots and reading their stage of growth against known development times gives the post-mortem interval.

Why the other options are wrong:

- A, ants: scavengers that cause artefacts, not the primary colonisers used for dating.
- B, beetles: arrive in later waves of succession, on drier remains.
- D, honey bees: not carrion insects.

Final Answer: Blowflies (Calliphoridae) $\Rightarrow$ C

Answer: (C) Go Back to Q2

Q3.

Solution

Concept – maggots and the minimum post-mortem interval: Maggot age tells us how long ago the eggs were laid, which is close to the time of death.

Step 1 – the logic: The **oldest and largest maggots** are collected and their developmental age read off against temperature-linked growth data.

Step 2 – why it is a minimum: Because eggs are laid soon after death, the oldest maggots give the shortest possible time the body has been dead.

Why the other options are wrong:

- A, within a few minutes: eggs are laid soon but take hours to hatch into maggots.
- C, only after skeletonisation: maggots feed on soft tissue well before that.
- D, size unrelated to time: maggot growth is directly time and temperature dependent.

Final Answer: Age of the oldest maggots gives the minimum interval $\Rightarrow$ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept – coup and contrecoup injury: A moving head striking a fixed surface can bruise the brain at two sites.

Step 1 – identify X: The contusion on the side **opposite** the point of impact is the **contrecoup injury**; the one directly under the impact is the coup injury.

Step 2 – mechanism: As the head decelerates, the brain lags and rebounds, striking the skull on the far side.

Why the other options are wrong:

- A, coup injury: lies directly beneath the impact, not opposite it.
- C, fracture contusion: a bruise under a fracture, a different entity.
- D, herniation contusion: from brain shift against dural folds, not the opposite-pole rebound.

Final Answer: Contrecoup injury ⇒ B

Answer: (B) Go Back to Q4

Q5.

Solution

Concept – lucid interval and extradural bleed: A talk-and-die course points to arterial bleeding above the dura.

Step 1 – read the clues: A temple blow, a lucid interval, then rapid deterioration is the classic picture of an **extradural (epidural) haemorrhage**.

Step 2 – the source: The thin temporal bone overlies the middle meningeal artery, which tears and bleeds fast, expanding the clot.

Why the other options are wrong:

- A, subdural: usually venous (bridging veins), slower, less often a crisp lucid interval.
- B, subarachnoid: sudden severe headache, commonly from a ruptured aneurysm.
- D, diffuse axonal injury: deep unconsciousness from the outset, no lucid interval.

Final Answer: Extradural (epidural) haemorrhage ⇒ C

Answer: (C) Go Back to Q5

Q6.

Solution

Concept – ligature mark in hanging: The way the body hangs shapes the mark left on the neck.

Step 1 – identify X: In hanging the mark is **high up on the neck, oblique, and non-continuous**, running upward towards the knot where it fades.

Step 2 – reason: The suspending weight of the body pulls the ligature up under the jaw, so it does not encircle the neck evenly.

Why the other options are wrong:

- B, low, horizontal and continuous: this is the pattern of ligature strangulation, not hanging.

- C, multiple horizontal marks: not the single oblique groove of hanging.
- D, absent: a ligature mark is usually well seen in hanging.

Final Answer: High, oblique, non-continuous $\Rightarrow$ A

Answer: (A) Go Back to Q6

Q7.

Solution

Concept – distinguishing hanging from strangulation: Certain signs are seen only when the body was suspended while still alive.

Step 1 – read the sign: A **dribble of saliva** tracking down from the angle of the mouth is a reliable sign of **ante-mortem hanging**.

Step 2 – why it happens: In a live suspended person the mouth stays open and gravity lets saliva run down; a dead body placed in a noose cannot dribble in this way.

Why the other options are wrong:

- A, ligature strangulation: the mark is low and horizontal; salivary dribbling is not its feature.
- B, throttling: shows finger-nail marks and bruises on the neck, not a hanging dribble.
- D, drowning: fine froth at mouth and nostrils, a different sign.

Final Answer: Ante-mortem hanging $\Rightarrow$ C

Answer: (C) Go Back to Q7

Q8.

Solution

Concept – age of valid consent for examination: The law fixes an age below which a person cannot give legally valid consent to be examined.

Step 1 – state the age: A person aged **12 years** or more can give valid consent for a general physical examination done for their own benefit.

Step 2 – context: Below 12 years, consent must come from the parent or guardian; consent for an operation or for a procedure with appreciable risk needs 18 years.

Why the other options are wrong:

- A, 18 years: the age for valid consent to surgery or a risky procedure, not a plain examination.
- C, 21 years: not a consent threshold in this context.
- D, 7 years: below the age at which examination consent becomes valid.

Final Answer: 12 years $\Rightarrow$ B

Answer: (B) Go Back to Q8

Q9.

Solution

Concept – types of consent: Consent may be expressed in words or shown by conduct.

Step 1 – classify the act: By sitting down and offering the arm, the patient gives **implied consent**, shown by behaviour rather than by words.

Step 2 – limits: Implied consent covers only simple, low-risk routine acts such as recording pulse or blood pressure.

Why the other options are wrong:

- B, express written consent: needed for operations, not for a blood-pressure check.
- C, informed consent for a major operation: requires full disclosure of risks; far beyond this act.
- D, proxy consent: given by another person for someone who cannot consent, not the case here.

Final Answer: Implied consent $\Rightarrow$ A

Answer: (A) Go Back to Q9

Q10.

Solution

Concept – consent in an emergency: Life-saving care must not be delayed for want of a signature.

Step 1 – correct action: The doctor should **proceed at once under the doctrine of necessity**, giving the treatment a reasonable person would want.

Step 2 – justification: The law protects the doctor who acts in good faith to save life when consent cannot be obtained in time.

Why the other options are wrong:

- B, wait for a relative: fatal delay; not required for emergency care.
- C, refuse treatment: abandoning the patient would be negligence.
- D, consent from a bystander: a stranger has no authority to consent.

Final Answer: Proceed under the doctrine of necessity $\Rightarrow$ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept – doctor's duties in a poisoning case: Besides treating the patient, the doctor has medico-legal duties towards the evidence.

Step 1 – the key duty: The doctor must **preserve the vomit, stomach wash and other samples** in clean containers and hand them over for chemical analysis.

Step 2 – further duties: Note the nature of the poison, keep records, and in a suspected homicide inform the police.

Why the other options are wrong:

- A, destroy the vomit: this destroys vital evidence.
- B, discharge quickly: premature discharge endangers the patient and the case.
- C, ignore the source: identifying the poison guides both treatment and the investigation.

Final Answer: Preserve samples for chemical analysis $\Rightarrow$ D

Answer: (D) Go Back to Q11

Q12.

Solution

Concept – chelating agents and their metals: Each chelating antidote is matched to particular metal poisons.

Step 1 – match desferrioxamine: Desferrioxamine binds free iron and is the specific antidote in **iron** poisoning.

Step 2 – remember the set: BAL (dimercaprol) for arsenic and mercury, EDTA (calcium disodium) for lead, and penicillamine for copper.

Why the other options are wrong:

- A, lead: treated with EDTA (and DMSA), not desferrioxamine.
- B, arsenic: treated with BAL.
- C, copper: treated with penicillamine.

Final Answer: Iron $\Rightarrow$ D

Answer: (D) Go Back to Q12

Q13.

Solution

Concept – mechanism of cyanide toxicity: Cyanide is a fast cellular (histotoxic) asphyxiant.

Step 1 – the target: Cyanide **inhibits cytochrome c oxidase (cytochrome a_3)**, blocking the final step of the electron transport chain.

Step 2 – the result: Cells cannot use oxygen, aerobic respiration stops, and death follows within minutes; venous blood stays bright red.

Why the other options are wrong:

- A, sodium-channel block: this is the action of some other toxins, not cyanide.
- C, carboxyhaemoglobin: that is carbon monoxide, not cyanide.
- D, methaemoglobinaemia only: methaemoglobin formation is part of the antidote strategy, not the primary lethal mechanism.

Final Answer: Inhibits cytochrome oxidase $\Rightarrow$ B

Answer: (B) Go Back to Q13

Q14.

Solution

Concept – carbon monoxide and blood colour: Carbon monoxide changes the colour of blood and skin.

Step 1 – the pigment: CO binds haemoglobin to form **carboxyhaemoglobin**, which is bright cherry-red.

Step 2 – the picture: The skin, lips, nails and post-mortem lividity all show this characteristic cherry-red colour.

Why the other options are wrong:

- A, methaemoglobin: gives brown, chocolate-coloured blood.
- B, sulphaemoglobin: gives a greenish tinge.
- D, cyanmethaemoglobin: an intermediate in cyanide antidote therapy, not the cause of the cherry-red colour.

Final Answer: Carboxyhaemoglobin $\Rightarrow$ C

Answer: (C) Go Back to Q14

Q15.

Solution

Concept – affinity of carbon monoxide for haemoglobin: CO competes with oxygen for the same haemoglobin binding sites.

Step 1 – state the affinity: Carbon monoxide binds haemoglobin about **200 to 250 times** more strongly than oxygen does.

Step 2 – read the curve (X): This tight binding shifts the oxygen-dissociation curve to the left, so the oxygen that is still carried is not released to the tissues, worsening the hypoxia.

Why the other options are wrong:

- A, about 2 times: far too low to explain the danger of small CO concentrations.
- B, about 10 times: still a gross underestimate.
- C, about 50 times: below the accepted value of roughly 200 to 250.

Final Answer: About 200 to 250 times $\Rightarrow$ D

Answer: (D) Go Back to Q15

Answer Key

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