INI CET Forensic Medicine

Sample Paper – 3

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 based on established medicolegal and toxicological principles.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

Thanatology

Q1. Post-mortem hypostasis (lividity) begins soon after death, but it usually becomes “fixed” (does not shift when the body position is changed) after approximately:

(A) 30 minutes

(B) 1 to 2 hours

(C) 6 to 8 hours

(D) 24 to 36 hours

Q2. A distinct cherry-red colour of post-mortem lividity is the classic finding in poisoning by:

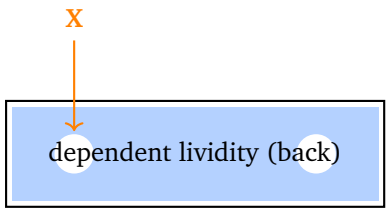
(A) Hydrogen sulphide

(B) Carbon monoxide

(C) Potassium cyanide

(D) Nitrites

Q3. The supine body in the figure shows lividity over the dependent back, with pale areas (marked **X**) over the shoulder blades and buttocks. This blanching over pressure points, together with which feature, best distinguishes post-mortem hypostasis from a bruise?



pressure pallor

(A) It is raised above the surface with swelling of the surrounding tissues

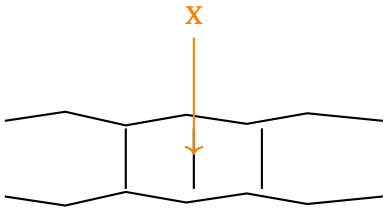
(B) It changes colour from blue to green to yellow over several days

(C) On incision the blood stays within vessels and washes away, with no clot in the tissues

(D) It is confined strictly to bony prominences and pressure areas

Mechanical Injuries

Q4. The wound in the figure has irregular, ragged margins with intact tissue strands (marked **X**) crossing its depth. This tissue bridging tells you the wound is a:



ragged margins with tissue bridges

(A) Laceration

(B) Incised wound

(C) Stab (punctured) wound

(D) Surgical clean wound

Q5. Which feature favours an incised wound rather than a laceration?

(A) Clean-cut, everted margins with no tissue bridging

(B) Abraded and contused (bruised) margins

(C) Tissue bridges running across the depth of the wound

(D) Depth that is greater than the length

Asphyxial Deaths

Q6. Paltauf's haemorrhages, seen in death by drowning, are pale bluish subpleural haemorrhages found on the surface of the:

(A) Brain

(B) Heart

(C) Kidneys

(D) Lungs

Q7. The single most reliable laboratory test to confirm ante-mortem drowning, useful even in a decomposed body, is the:

(A) Gettler test (chloride estimation)

(B) Lung flotation test

(C) Diatom test

(D) Kastle-Meyer test

Forensic Identification and Medical Jurisprudence

Q8. Compared with a female skull, a male skull characteristically shows:

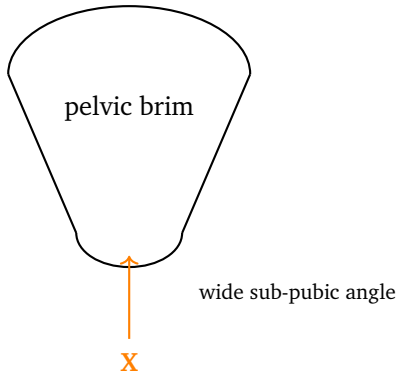
(A) Sharp, thin supraorbital margins

(B) More prominent supraorbital ridges and larger mastoid processes

(C) A lighter, smaller overall build

(D) A vertical forehead with a smooth, rounded contour

Q9. The pelvis in the figure is being sexed at the sub-pubic angle (marked **X**). A sub-pubic angle that is wide and rounded (greater than about 90 degrees), shaped like the letter U, indicates a:



(A) Male pelvis with a narrow V-shaped angle

(B) Skeleton of a young child

(C) Pelvis of indeterminate sex

(D) Female pelvis

Q10. Which single skeletal structure is regarded as the most reliable for sex determination?

(A) Skull

(B) Pelvis

(C) Sternum

(D) Femur

General Toxicology and Corrosive Poisons

Q11. Poisoning by carbolic acid (phenol) classically produces which urinary finding?

(A) Cherry-red urine

(B) Frank red haematuria only

(C) Milky white urine

(D) Green or smoky-dark urine on standing (carboluria)

Q12. Corrosive alkalis (such as caustic soda) damage the tissues by producing which type of necrosis, giving a soft, soapy, translucent slough?

(A) Liquefactive (colliquative) necrosis with a soft, soapy slough

(B) Coagulative necrosis with a hard, leathery slough

(C) Caseous necrosis

(D) Essentially no tissue damage

Specific Poisons

Q13. Russell's viper venom is chiefly _____, whereas cobra venom is chiefly _____.

(A) neurotoxic ... vasculotoxic

(B) vasculotoxic (haematotoxic) ... neurotoxic

(C) neurotoxic ... neurotoxic

(D) myotoxic ... cardiotoxic

Q14. The definitive treatment for systemic envenomation following a poisonous snake bite is:

(A) Polyvalent anti-snake venom (ASV)

(B) Intravenous atropine

(C) Oral activated charcoal

(D) Vitamin K injection

Q15. The drug of choice to control the autonomic storm (severe hypertension and pulmonary oedema) after a red scorpion (*Mesobuthus tamulus*) sting is:

(A) Atropine

(B) Adrenaline

(C) Prazosin (alpha-1 blocker)

(D) Digoxin

Detailed Solutions

Q1.

Solution

Concept – development of post-mortem lividity: Hypostasis is the settling of blood into dependent capillaries and venules after circulation stops.

Step 1 – timeline: It begins within about 30 minutes to 1 hour, becomes appreciable by 1 to 2 hours, and is well developed by about 4 hours.

Step 2 – fixation: By roughly **6 to 8 hours** the blood diffuses out of vessels and stains the tissues, so the lividity becomes fixed and no longer shifts when the body is turned.

Why the other options are wrong:

- A and B, 30 minutes and 1 to 2 hours: lividity is only appearing then and still shifts freely.
- D, 24 to 36 hours: far too late; fixation is complete well before this.

Final Answer: Fixed at 6 to 8 hours $\Rightarrow$ C

Answer: (C) Go Back to Q1

Q2.

Solution

Concept – colour of lividity as a clue to cause of death: The colour reflects the pigment bound to haemoglobin.

Step 1 – match the colour: A **cherry-red** lividity is due to carboxyhaemoglobin, so it points to **carbon monoxide** poisoning.

Step 2 – remember the set: Cyanide gives a bright brick-red, nitrites give a brown (methaemoglobin) tint, and ordinary asphyxia gives a bluish (deoxygenated) colour.

Why the other options are wrong:

- A, hydrogen sulphide: greenish discolouration, not cherry-red.
- C, cyanide: brick-red or bright red, distinct from the classic CO cherry-red.
- D, nitrites: brown, chocolate-coloured blood from methaemoglobin.

Final Answer: Carbon monoxide $\Rightarrow$ B

Answer: (B) Go Back to Q2

Q3.

Solution

Concept – hypostasis versus bruise: Both look purple, but one is blood inside vessels and the other is blood forced into tissues.

Step 1 – read the figure: Lividity spares the pressure points (shoulder blades, buttocks) because contact flattens the capillaries; that is the pale area marked X.

Step 2 – the deciding test: On incision, hypostatic blood **stays inside vessels and washes away**, leaving no clot; a bruise has extravasated, clotted blood in the tissues that cannot be washed off.

Why the other options are wrong:

- A, raised with swelling: that describes a bruise, not flat lividity.
- B, colour change over days: that is the ageing of a bruise.
- D, confined to pressure areas: the reverse is true; pressure areas are pale, not lived.

Final Answer: Blood within vessels, washes away $\Rightarrow$ C

Answer: (C) Go Back to Q3

Q4.

Solution

Concept – tissue bridging: The nature of the wound margins tells you how the injury was caused.

Step 1 – identify X: Intact strands of tissue (nerves, vessels, connective tissue) crossing the wound depth are **tissue bridges**, produced when tissue is torn rather than cleanly cut.

Step 2 – classify: Ragged margins plus tissue bridging define a **laceration**, caused by blunt force splitting the tissues.

Why the other options are wrong:

- B, incised wound: a sharp cut leaves clean margins with no bridging.
- C, stab wound: depth exceeds length; it is not a ragged split.
- D, surgical wound: deliberately clean-cut and sutured.

Final Answer: Laceration $\Rightarrow$ A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – incised wound versus laceration: A sharp-edged weapon and a blunt force leave opposite signatures.

Step 1 – name the incised-wound feature: An incised wound has **clean-cut, everted margins with no tissue bridging**, and its length is greater than its depth.

Step 2 – contrast: A laceration has abraded, contused margins and tissue bridges in its depth.

Why the other options are wrong:

- B, abraded and contused margins: a laceration feature.
- C, tissue bridges: a laceration feature.
- D, depth greater than length: a feature of a stab wound.

Final Answer: Clean-cut, everted margins, no bridging $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q5

Q6.

Solution

Concept – signs of drowning: Several autopsy signs together suggest antemortem drowning.

Step 1 – locate Paltauf's haemorrhages: They are pale, bluish subpleural haemorrhages found on the surface of the **lungs**, caused by alveolar rupture and water mixing with blood.

Step 2 – companion signs: Look also for fine white froth at the mouth, ballooned oedematous lungs, and washerwoman's hands (bleached, wrinkled skin) from prolonged immersion.

Why the other options are wrong:

- A, B and C, brain, heart and kidneys: not the site of Paltauf's haemorrhages.

Final Answer: Lungs $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – confirming ante-mortem drowning: The test must survive decomposition to be reliable.

Step 1 – name the test: The **diatom test** detects diatoms (silica-shelled algae) in the bone marrow of long bones such as the femur; their presence means water was inhaled and circulated while the heart was still beating.

Step 2 – why it beats the rest: Diatom silica resists putrefaction, so the test works even in decomposed bodies (relevant to both wet and dry drowning cases).

Why the other options are wrong:

- A, Gettler test: chloride difference between the two sides of the heart is unreliable and fails after decomposition.
- B, lung flotation test: this is the hydrostatic test for stillbirth, not drowning.
- D, Kastle-Meyer test: a presumptive test for blood, unrelated to drowning.

Final Answer: Diatom test $\Rightarrow$ C

Answer: (C) Go Back to Q7

Q8.

Solution

Concept – sexing the skull: The male skull is generally larger and more rugged.

Step 1 – name the male features: A male skull shows **more prominent supraorbital ridges and larger mastoid processes**, along with a heavier build and a sloping forehead.

Step 2 – contrast with female: The female skull has sharp, thin orbital margins, smaller mastoids, a vertical forehead and a lighter build.

Why the other options are wrong:

- A, sharp thin supraorbital margins: a female feature.
- C, lighter smaller build: a female feature.
- D, vertical rounded forehead: a female feature.

Final Answer: Prominent supraorbital ridges, large mastoids $\Rightarrow$ B

Answer: (B) Go Back to Q8

Q9.

Solution

Concept – sub-pubic angle: The angle between the two pubic bones differs sharply by sex.

Step 1 – read the figure: The angle marked X is wide and rounded, shaped like a U and greater than about 90 degrees.

Step 2 – assign the sex: A wide, U-shaped sub-pubic angle is a **female** feature; the female pelvis is broad and shallow to allow childbirth.

Why the other options are wrong:

- A, male: the male angle is narrow and V-shaped, below 90 degrees.
- B, child: immature pelves are not sexed by this angle.
- C, indeterminate: the wide U angle is a clear female marker.

Final Answer: Female pelvis $\Rightarrow$ $\boxed{D}$

Answer: (D) Go Back to Q9

Q10.

Solution

Concept – best bone for sex: Some bones carry stronger sexual dimorphism than others.

Step 1 – name it: The **pelvis** is the single most reliable structure for sex determination, giving accuracy of about 95 percent.

Step 2 – rank the rest: The skull is the second best; long bones such as the femur are less reliable on their own.

Why the other options are wrong:

- A, skull: reliable but ranks below the pelvis.
- C, sternum: only a supportive indicator.
- D, femur: helpful but less dimorphic than the pelvis.

Final Answer: Pelvis $\Rightarrow$ $\boxed{B}$

Answer: (B) Go Back to Q10

Q11.

Solution

Concept – carbolic acid (phenol) poisoning: Phenol is a corrosive with a characteristic urinary sign.

Step 1 – name the finding: Absorbed phenol is excreted as oxidation products that turn the urine **green or smoky-dark on standing**; this is called carboluria.

Step 2 – supporting features: Look also for a leathery grey-white corrosion of the mouth and a persistent hiccough.

Why the other options are wrong:

- A, cherry-red urine: not a feature of phenol.
- B, frank haematuria: not the classic sign.
- C, milky white urine: suggests chyluria, unrelated to phenol.

Final Answer: Green or smoky-dark urine (carboluria) $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q11

Q12.

Solution

Concept – corrosive alkalis versus acids: The type of necrosis separates the two groups.

Step 1 – name the alkali effect: Corrosive alkalis cause **liquefactive (colliquative) necrosis**, saponifying fat and dissolving protein to leave a soft, soapy, translucent slough that penetrates deeply.

Step 2 – contrast: Mineral acids cause coagulative necrosis with a hard, dry, leathery eschar that limits penetration.

Why the other options are wrong:

- B, coagulative with hard slough: this is the acid pattern.
- C, caseous necrosis: a feature of tuberculosis, not corrosives.
- D, no tissue damage: alkalis are strongly corrosive.

Final Answer: Liquefactive necrosis, soft soapy slough $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q12

Q13.

Solution

Concept – snake venom types: Vipers and elapids act on different systems.

Step 1 – classify each venom: Russell's viper venom is chiefly **vasculotoxic (haematotoxic)**, causing local swelling, bleeding and consumption coagulopathy; cobra venom is chiefly **neurotoxic**, causing descending paralysis.

Step 2 – clinical clue: Marked local swelling and bleeding point to a viper; ptosis and respiratory paralysis without much local reaction point to a cobra or krait.

Why the other options are wrong:

- A, neurotoxic then vasculotoxic: the pairing is reversed.
- C, neurotoxic then neurotoxic: viper venom is not primarily neurotoxic.
- D, myotoxic then cardiotoxic: not the standard Indian viper/cobra profile.

Final Answer: Vasculotoxic viper, neurotoxic cobra $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q13

Q14.

Solution

Concept – treatment of envenomation: Only one measure neutralises circulating venom.

Step 1 – name it: Polyvalent anti-snake venom (ASV) is the definitive treatment; the Indian polyvalent product covers cobra, krait, Russell's viper and saw-scaled viper.

Step 2 – how to use it: Give it intravenously once there are signs of systemic envenomation, and support with neostigmine and ventilation for neurotoxic bites.

Why the other options are wrong:

- B, atropine: given only alongside neostigmine, it does not neutralise venom.
- C, activated charcoal: useless for injected venom.
- D, vitamin K: does not reverse venom-induced coagulopathy.

Final Answer: Polyvalent anti-snake venom $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q14

Q15.

Solution

Concept – red scorpion sting: The danger is an autonomic storm rather than local injury.

Step 1 – name the drug: Prazosin, an alpha-1 adrenergic blocker, is the drug of choice; it counters the catecholamine surge that drives severe hypertension and pulmonary oedema.

Step 2 – supportive care: Add scorpion antivenom where available, plus oxygen and management of pulmonary oedema.

Why the other options are wrong:

- A, atropine: may worsen the tachycardia phase and is not first line.
- B, adrenaline: adds to the catecholamine excess and is harmful.
- D, digoxin: not the treatment for this autonomic storm.

Final Answer: Prazosin $\Rightarrow$ C

Answer: (C) Go Back to Q15

Answer Key

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