

NEET PG Forensic Medicine Sample Paper-8

Duration: 10 Minutes

Maximum Marks: 40

Instructions

- This paper contains **10** Multiple Choice Questions.
- Each correct answer carries **+4** mark. Incorrect answer: **-1** marks. Only **one** correct option.
- Unattempted questions carry **0** marks.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.

Q1. A medical practitioner provides false evidence under oath during a court trial. Under which section of the Indian Penal Code (IPC) is this offense punishable?

- (A) Section 191 IPC
- (B) Section 193 IPC
- (C) Section 201 IPC
- (D) Section 228 IPC

Q2. A married woman dies within 4 years of her marriage under unnatural circumstances. The police suspect foul play due to persistent demands for dowry by her in-laws. Under which section of the Indian Penal Code will a presumption of dowry death be raised?

- (A) Section 304A IPC
- (B) Section 304B IPC
- (C) Section 306 IPC
- (D) Section 498A IPC

Q3. A doctor discloses the HIV-positive status of a patient to the patient's prospective spouse without the patient's explicit consent. In a court of law, this action is protected under which of the following legal doctrines?



- (A) Professional secrecy
- (B) Privileged communication
- (C) Medical negligence
- (D) Vicarious liability

Q4. A 28-year-old male is brought to the emergency department with altered mental status, severe respiratory depression, and pinpoint pupils. On examination, multiple needle track marks are noted over his forearms. Which of the following toxidromes is most likely responsible for this presentation?

- (A) Anticholinergic toxidrome
- (B) Opioid toxidrome
- (C) Sympathomimetic toxidrome
- (D) Cholinergic toxidrome

Q5. During a medico-legal autopsy of an industrial worker suspected of inhaling a toxic gas, the forensic pathologist observes a distinct bright cherry-red discoloration of the blood, viscera, and post-mortem staining. Which toxic agent is characteristically associated with this finding?

- (A) Carbon monoxide
- (B) Hydrogen sulfide
- (C) Phosphorus
- (D) Hydrocyanic acid

Q6. Refer to the image provided below showing the seeds of a poisonous plant. Accidental ingestion of these seeds leads to clinical manifestations characterized by dry mouth, hot flushed skin, dilated pupils, delirium, and a rapid thumping pulse. Identify the active alkaloid responsible for this poisoning. [Image: Daggered, spherical, spinous fruit capsule containing compressed kidney-shaped seeds with a pitted testa]





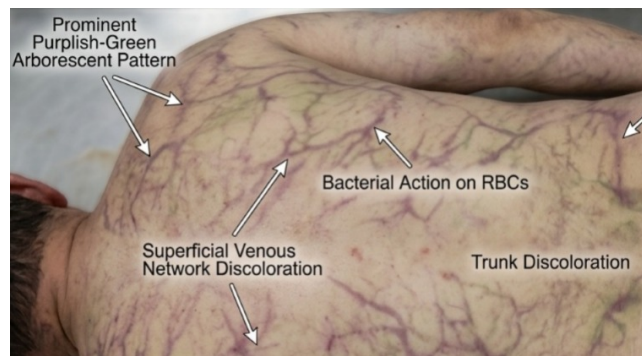
- (A) Strychnine
- (B) Atropine
- (C) Nicotine
- (D) Ricin

Q7. A patient presents with chronic exposure to an occupational poison, exhibiting loosening of teeth, painful swelling of the lower jaw, and osteomyelitis. Radiographs reveal a "moth-eaten" appearance of the mandible. Which of the following substances is the causal agent?

- (A) Lead
- (B) Mercury
- (C) White phosphorus
- (D) Chronic arsenic

Q8. Refer to the image provided below. A forensic pathologist performs an autopsy on a body recovered from a warm room 36 hours after death. The image shows a prominent purplish-green network of superficial veins over the chest, shoulders, and thighs. What is the precise name given to this specific post-mortem phenomenon? [Image: Arborescent purplish-green discoloration pattern across the skin surface of the trunk and limbs due to bacterial action on RBCs]





- (A) Rigor mortis
- (B) Cadaveric spasm
- (C) Marbling
- (D) Adipocere formation

Q9. A skeletal remains examination is conducted for age estimation of a deceased fetus. The crown-heel length of the fetus is found to be 25 cm. According to Hasse's rule, what is the approximate gestational age of this fetus in lunar months?

- (A) 3 lunar months
- (B) 5 lunar months
- (C) 7 lunar months
- (D) 9 lunar months

Q10. Which of the following parameters forms the foundation of Gustafson's method for the determination of age from individual human teeth during forensic investigations?

- (A) Attrition, periodontitis, secondary dentine, cementum apposition, root resorption, transparency of root
- (B) Cranial suture closure, dental eruption, epiphyseal fusion
- (C) Length of the mandibular body, mental foramen position, angle of the jaw
- (D) Total number of permanent teeth erupted minus deciduous teeth shed

Detailed Solutions

Q1.

Solution**Concept:**

In forensic jurisprudence, providing false statements while under a legal obligation to tell the truth constitutes a serious offense against public justice. The Indian Penal Code distinctly separates the definition of giving false evidence from the specific judicial punishment prescribed for committing this act during court proceedings.

Solution:

- (a) Section 191 of the Indian Penal Code defines the act of giving false evidence, which occurs when a person legally bound by an oath or express provision of law to state the truth makes a statement they know or believe to be false.
- (b) Section 193 of the IPC prescribes the actual punishment for intentionally giving false evidence in any stage of a judicial proceeding, or fabricating false evidence for the purpose of being used in any stage of a judicial proceeding.
- (c) The punishment specified under Section 193 IPC for giving false evidence in a court of law can extend to seven years of rigorous or simple imprisonment along with a fine.
- (d) Section 201 IPC deals with causing the disappearance of evidence of an offense or giving false information to screen the offender from legal punishment.
- (e) Section 228 IPC pertains specifically to intentional insult or interruption caused to a public servant sitting in any stage of a judicial proceeding.

Final Answer: Section 193 IPC

Answer: (B)

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Q2.

Solution**Concept:**

Dowry deaths represent a critical area of medico-legal investigation in cases of unnatural deaths among newly married women. Specific statutory provisions exist within Indian criminal law to address bridal harassment and create legal presumptions that shift the burden of proof onto the accused.

Solution:

- (a) Section 304B of the Indian Penal Code defines and punishes the offense of dowry death, applicable when a woman dies of burns, bodily injury, or unnatural circumstances within seven years of her marriage.
- (b) For a charge under Section 304B IPC, evidence must show that soon before her death, she was subjected to cruelty or harassment by her husband or relatives in connection with any demand for dowry.
- (c) Section 498A IPC deals independently with cruelty by a husband or relatives of the husband, which can include mental or physical harassment for dowry, but does not specifically define the offense of dowry death.
- (d) Section 306 IPC governs the abetment of suicide, which carries a different burden of proof and structural legal requirements compared to dowry death.
- (e) Section 304A IPC defines punishment for causing death by negligence, which applies to rash or negligent acts lacking criminal intent, such as vehicular accidents or clinical mishaps.

Final Answer: Section 304B IPC

Answer: (B)

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Q3.

Solution**Concept:**

Medical ethics dictate confidentiality between a physician and a patient, but certain situations demand disclosure to protect public health or innocent individuals. Forensic jurisprudence recognizes legal exceptions where disclosing confidential medical information becomes a professional duty.

Solution:

- (a) Privileged communication refers to a communication made by a medical practitioner to a concerned authority or individual in the interest of public safety or the well-being of the community.
- (b) When a patient is diagnosed with a communicable, life-threatening disease like HIV, the physician has a moral and legal duty to inform a prospective spouse to prevent transmission, overriding standard confidentiality.
- (c) This exception is legally backed by landmark judgments, which establish that the right to health and life of a prospective spouse supersedes the patient's right to absolute privacy.
- (d) Professional secrecy is the ethical rule that forbids a doctor from disclosing information obtained during the course of medical practice to anyone else, which is breached only under privilege or court order.
- (e) Vicarious liability is a legal doctrine where an employer is held responsible for the negligent actions of their employee performed during the regular course of employment.

Final Answer: Privileged communication

Answer: (B)

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Q4.

Solution**Concept:**

Clinical toxicology relies heavily on recognizing combinations of signs and symptoms known as toxidromes to identify unknown poisonous substances. Opioid overdose presents with a classic clinical triad that allows immediate diagnosis and intervention in emergency settings.

Solution:

- (a) The classic diagnostic triad of an opioid toxidrome consists of marked central nervous system depression, profound respiratory depression, and severe pupillary constriction presenting as pinpoint pupils.
- (b) Needle track marks along superficial veins strongly indicate chronic intravenous drug abuse, pointing directly toward illicit opioid administration like heroin or morphine use.
- (c) Anticholinergic toxidrome presents with opposing signs such as marked mydriasis (dilated pupils), delirium, dry flushed skin, hyperthermia, and tachycardia.
- (d) Sympathomimetic toxidrome presents with dilated pupils, tachycardia, hypertension, and agitation, but lacks the profound respiratory depression and miosis characteristic of opioid poisoning.
- (e) Cholinergic toxidrome involves excessive parasympathetic stimulation leading to miosis, but is accompanied by profuse sweating, salivation, lacrimation, urination, diarrhea, and muscle fasciculations.

Final Answer: Opioid toxidrome

Answer: (B)

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Q5.

Solution**Concept:**

Inhalation of toxic gases often produces highly specific pathological alterations due to chemical interactions with hemoglobin and internal tissues. The color changes observed in post-mortem lividity and internal organs provide crucial diagnostic clues during autopsy.

Solution:

- (a) Carbon monoxide gas binds to hemoglobin with an affinity approximately 200 times greater than oxygen, forming a stable compound known as carboxyhemoglobin.
- (b) The presence of carboxyhemoglobin imparts a highly characteristic bright cherry-red discoloration to the blood, skeletal muscles, internal viscera, and the areas of post-mortem lividity.
- (c) Hydrocyanic acid or cyanide poisoning prevents cellular respiration by inhibiting cytochrome oxidase, leaving blood highly oxygenated, which generates a bright brick-red or pinkish discoloration rather than cherry-red.
- (d) Hydrogen sulfide exposure leads to the formation of sulfhemoglobin, which typically imparts a dark greenish or bluish-green tint to the blood and internal organs post-mortem.
- (e) Chronic or acute phosphorus poisoning leads to severe degenerative changes in the liver and kidneys, often manifesting with jaundice and a luminous appearance of tissues under dark conditions.

Final Answer: Carbon monoxide

Answer: (A)

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Q6.

Solution**Concept:**

Deliriant plant poisons produce severe central and peripheral effects by blocking parasympathetic pathways. Identifying these plants relies on distinctive seed morphology and the characteristic clinical presentation of anticholinergic toxicity.

Solution:

- (a) The description of a daggered, spherical, spinous fruit capsule containing compressed kidney-shaped seeds with a pitted testa corresponds specifically to *Datura* species.
- (b) *Datura* seeds contain tropane alkaloids, primarily atropine, hyoscyamine, and scopolamine, which act as competitive antagonists at muscarinic acetylcholine receptors.
- (c) Ingestion leads to classic anticholinergic features including dry mouth due to suppressed salivation, hot flushed skin, widely dilated fixed pupils, delirium, hallucinations, and tachycardia.
- (d) Strychnine is derived from *Strychnos nux-vomica* seeds, which are flat, disc-like, and smooth, causing spinal convulsions without producing the classic deliriant anticholinergic syndrome.
- (e) Nicotine from *Nicotiana tabacum* causes initial stimulation followed by blockage of nicotinic receptors, presenting with tremors, convulsions, and respiratory failure rather than deliriant symptoms.

Final Answer: Atropine

Answer: (B)

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Q7.

Solution**Concept:**

Chronic industrial exposure to heavy metals and metalloids produces unique target organ toxicities that manifest clearly on physical and radiological examination. Necrosis of bone tissues occurs due to chronic contact with specific volatile elemental substances.

Solution:

- (a) Chronic poisoning with white or yellow phosphorus, often seen historically in match industry workers, leads to a specific condition known as phossy jaw.
- (b) The condition begins with painful toothaches and loosening of teeth, progressing to severe osteomyelitis, tissue necrosis, and sequestration of the mandibular bone.
- (c) Radiographic assessment typically displays a characteristic moth-eaten appearance of the mandible due to the irregular areas of bone destruction and new bone formation.
- (d) Chronic lead poisoning, or plumbism, manifests with a distinctive blue line on the gums, anemia, colicky abdominal pain, and peripheral neuropathy causing wrist drop.
- (e) Chronic mercury poisoning presents with neurological features like tremors, erethism, and gingivitis, but does not typically induce localized osteomyelitis of the mandible.

Final Answer: White phosphorus

Answer: (C)

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Q8.

Solution**Concept:**

Decomposition involves a series of predictable tissue alterations driven by autolysis and bacterial activity. Visualizing putrefactive changes allows the forensic pathologist to estimate the post-mortem interval based on vascular discoloration.

Solution:

- (a) Marbling is a distinct post-mortem phenomenon that develops during the early stages of putrefaction, typically appearing within 24 to 36 hours after death in warm climates.
- (b) The process is driven by intestinal bacteria that produce hydrogen sulfide gas, which diffuses into the surrounding tissues and reacts with hemoglobin in superficial blood vessels.
- (c) The reaction forms sulfhemoglobin, creating a striking arborescent, purplish-green network of superficial veins resembling the pattern seen on polished marble stone.
- (d) Rigor mortis refers to the temporary stiffening of muscles due to ATP depletion, which typically disappears completely by 36 hours as decomposition begins.
- (e) Adipocere formation, or saponification, is a modification of putrefaction occurring in damp, anaerobic environments where body fat turns into a yellowish-white, waxy substance over weeks.

Final Answer: Marbling

Answer: (C)

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Q9.

Solution**Concept:**

Forensic anthropometry provides specialized mathematical models to establish fetal age based on anatomical measurements. Hasse's rule utilizes total fetal length to derive the gestational age in lunar months.

Solution:

- (a) Hasse's rule states that for a fetus during the first five months of gestation, the length in centimeters is equal to the square of the age in lunar months.
- (b) For the second half of gestation, from the sixth month onward, the total crown-heel length in centimeters is calculated by multiplying the age in lunar months by five.
- (c) Given a fetal crown-heel length of 25 cm, applying the first rule shows that 25 is the perfect square of 5, indicating a gestational age of 5 lunar months.
- (d) If the fetus were 7 lunar months old, the expected length according to Hasse's rule would be 7 multiplied by 5, resulting in 35 centimeters.
- (e) Correct determination of fetal age using this method helps forensic specialists assess viability, criminal abortion claims, or cases involving concealed births.

Final Answer: 5 lunar months

Answer: (B)

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Q10.

Solution**Concept:**

Dental forensic science utilizes age-associated microstructural and morphological alterations in adult teeth to estimate chronological age. Gustafson's method remains a definitive scoring system based on six distinct dental variables.

Solution:

- (a) Gustafson's method evaluates six specific age-related dental alterations: attrition, periodontitis, secondary dentine deposition, cementum apposition, root resorption, and root transparency.
- (b) Attrition reflects the gradual wear of masticatory surfaces, while periodontitis tracks the recession of gingival attachments away from the crown.
- (c) Secondary dentine is continuously deposited within the pulp cavity over time, causing a predictable reduction in the size of the pulp chamber.
- (d) Root transparency, which occurs due to the progressive sclerosis and calcification of dentinal tubules, represents the most reliable single indicator among these criteria.
- (e) Each parameter is scored on a scale from 0 to 3, and the cumulative score is plugged into a regression formula to estimate age.

Final Answer: Attrition, periodontitis, secondary dentine, cementum apposition, root resorption, transparency of root

Answer: (A)

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Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	B	3	B	4	B	5	A
6	B	7	C	8	C	9	B	10	A

