INI CET Paediatrics

Sample Paper – 6

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

Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Paediatrics content of **INI CET** (Institutes of National Importance Combined Entrance Test) conducted by AIIMS New Delhi.
- The **15-question** length matches the number of Paediatrics 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.

Neonatology

Q1. A term baby born by elective caesarean section develops mild tachypnoea and grunting within the first hour, has a normal chest X-ray showing fluid in the horizontal fissure, and recovers fully within 24 to 48 hours. The most likely diagnosis is:

(A) Transient tachypnoea of the newborn (TTN)

(B) Respiratory distress syndrome

(C) Meconium aspiration syndrome

(D) Congenital diaphragmatic hernia

Q2. Which single feature best distinguishes a cephalhaematoma from a caput succedaneum in a newborn?

(A) It is always present at the moment of birth

(B) It contains only oedema fluid, not blood

(C) It is limited by suture lines and does not cross them

(D) It disappears completely within a few hours

Q3. A newborn after a difficult shoulder delivery keeps the affected arm adducted and internally rotated with the forearm pronated, giving a 'waiter's tip' posture. This Erb–Duchenne palsy results from injury to which nerve roots?

(A) C8 and T1

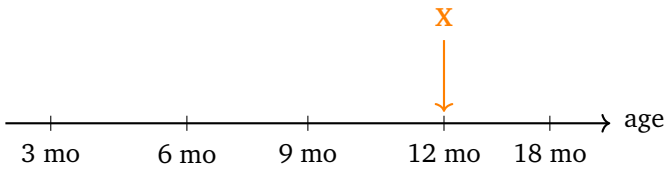
(B) C5 and C6

(C) C3 and C4

(D) T1 and T2

Growth, Development and Nutrition

Q4. On the gross-motor timeline below, the arrow **X** marks the age by which a normal child usually achieves *independent walking* (walks a few steps without support). That age is:



(A) About 12 to 15 months

(B) About 6 months

(C) About 24 months

(D) About 3 months

Q5. A child on a maize-based diet develops a photosensitive dermatitis over sun-exposed skin, chronic diarrhoea and progressive dementia. This classic triad of the '3 Ds' indicates deficiency of:

(A) Vitamin B1 (thiamine)

(B) Niacin (vitamin B3)

(C) Vitamin B12 (cobalamin)

(D) Vitamin B9 (folate)

Q6. A 3-year-old has a length that is far below the third centile for age (low length-for-age) but a normal weight-for-length. By WHO definitions this child is best described as:

(A) Wasted

(B) Overweight

(C) Oedematous (kwashiorkor)

(D) Stunted

Immunisation and Infectious Disease

Q7. Under India's Universal Immunisation Programme (UIP), the two booster doses of DPT (DPT booster 1 and booster 2) are scheduled at:

(A) Birth and 6 weeks

(B) 6, 10 and 14 weeks

(C) 9 months and 12 months

(D) 16 to 24 months and 5 to 6 years

Q8. An unimmunised infant has spells of rapid coughing followed by a high-pitched inspiratory 'whoop' and post-tussive vomiting, with a markedly raised lymphocyte count. The causative organism is:

(A) Corynebacterium diphtheriae

(B) Bordetella pertussis

(C) Respiratory syncytial virus

(D) Streptococcus pyogenes

Respiratory and Cardiovascular Paediatrics

Q9. A child has recurrent chest infections, bulky greasy stools (steatorrhoea) and failure to thrive, and the parents report the skin tastes salty. Which single investigation best confirms the suspected diagnosis of cystic fibrosis?

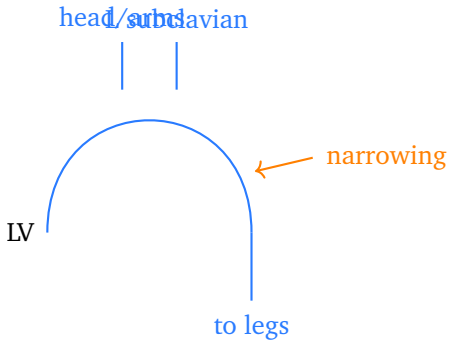
(A) Serum immunoglobulin E level

(B) Chest X-ray

(C) Sweat chloride test

(D) Complete blood count

Q10. The schematic shows the aorta with a narrowing (arrow) just beyond the origin of the left subclavian artery. A child with this lesion has strong upper-limb pulses but weak, delayed femoral pulses (radio-femoral delay) and upper-limb hypertension. The diagnosis is:



(A) Coarctation of the aorta

(B) Patent ductus arteriosus

(C) Atrial septal defect

(D) Mitral stenosis

Q11. An ex-preterm infant born at 27 weeks who needed prolonged mechanical ventilation and oxygen remains oxygen-dependent beyond 36 weeks postmenstrual age, with a chronic oxygen requirement and typical chest X-ray changes. This chronic lung disease is:

(A) Acute bronchiolitis

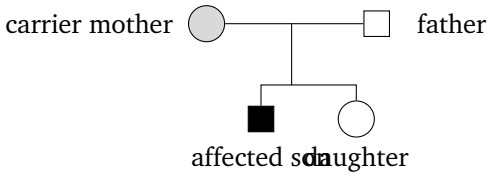
(B) Cystic fibrosis

(C) Foreign body aspiration

(D) Bronchopulmonary dysplasia

Haematology, Genetics and Systemic Disease

Q12. The mini-pedigree below shows an unaffected carrier mother and an unaffected father whose sons may be affected while daughters are not. A boy with recurrent haemarthrosis has a prolonged APTT that corrects on mixing, and a low factor VIII level. This inheritance pattern and diagnosis are:



(A) X-linked recessive haemophilia A (factor VIII deficiency)

(B) Autosomal dominant von Willebrand disease

(C) Autosomal recessive iron deficiency

(D) X-linked dominant vitamin K deficiency

Q13. A newborn screening programme flags a raised blood phenylalanine level. If untreated, this inborn error causes progressive intellectual disability, a musty body odour and fair pigmentation. The correct condition and its cornerstone of management are:

(A) Galactosaemia, treated with a lactose-free formula

(B) Phenylketonuria, treated with a phenylalanine-restricted diet

(C) Maple syrup urine disease, treated with insulin

(D) Congenital hypothyroidism, treated with iodine drops

Emergency, Fluids and Electrolytes

Q14. A farmer's child is brought in with pinpoint pupils, excessive salivation and lacrimation, bronchorrhoea, muscle fasciculations and bradycardia after contact with a pesticide. The specific antidote to give first for this organophosphate poisoning is:

(A) Naloxone

(B) Flumazenil

(C) Atropine

(D) Activated charcoal alone

Q15. An adolescent presents several hours after a deliberate overdose of paracetamol (acetaminophen) tablets, with a plasma level above the treatment line on the nomogram. The specific antidote that protects the liver is:

(A) Deferoxamine

(B) Vitamin K

(C) N-acetylcysteine

(D) Sodium bicarbonate

Detailed Solutions

Q1.

Solution

Concept – transient tachypnoea of the newborn (TTN): TTN is a benign, self-limiting cause of respiratory distress in the term or near-term baby.

Step 1 – read the clues: A term baby born by elective caesarean, mild tachypnoea and grunting from the first hour, retained lung fluid in the fissure on X-ray, and full recovery within 24 to 48 hours all point to **TTN**.

Step 2 – the mechanism: Delayed clearance of fetal lung fluid, which is more likely after caesarean birth because the baby misses the vaginal squeeze and the labour surge of catecholamines, leaves the lungs 'wet' and causes the transient tachypnoea.

Why the other options are wrong:

- B, respiratory distress syndrome: a disease of preterm babies from surfactant deficiency, which worsens rather than settles in 48 hours.
- C, meconium aspiration: occurs in post-term, meconium-stained babies with a patchy X-ray, not clear fluid in the fissure.
- D, congenital diaphragmatic hernia: causes a scaphoid abdomen and bowel in the chest, and does not resolve spontaneously.

Final Answer: Transient tachypnoea of the newborn $\Rightarrow$ A

Answer: (A) Go Back to Q1

Q2.

Solution

Concept – caput succedaneum versus cephalhaematoma: Both are scalp swellings after birth, but they lie in different tissue planes.

Step 1 – the discriminating feature: A cephalhaematoma is a subperiosteal collection of blood, so it is **limited by suture lines and does not cross them**. That single feature best separates it from a caput.

Step 2 – contrast with caput: A caput succedaneum is diffuse scalp oedema above the periosteum; it is present at birth, pits on pressure and freely crosses suture lines, fading within a few days.

Why the other options are wrong:

- A, present at birth: this describes caput; a cephalhaematoma often enlarges over hours after birth.
- B, contains only oedema fluid: that is caput, whereas a cephalhaematoma contains blood.
- D, disappears within a few hours: caput resolves quickly, but a cephalhaematoma takes weeks to resorb.

Final Answer: Limited by suture lines, does not cross them ⇒ C

Answer: (C) Go Back to Q2

Q3.

Solution

Concept – Erb–Duchenne palsy: Excessive traction on the neck at delivery injures the upper brachial plexus.

Step 1 – identify the roots: Erb–Duchenne palsy results from injury to the **C5 and C6** nerve roots of the upper brachial plexus.

Step 2 – explain the posture: Loss of these roots weakens the deltoid, biceps and external rotators, so the arm hangs adducted and internally rotated with the forearm pronated, giving the classic 'waiter's tip' position.

Why the other options are wrong:

- A, C8 and T1: injury to these lower roots causes Klumpke palsy with a claw hand, not the waiter's tip.
- C, C3 and C4: these supply the diaphragm (phrenic nerve), not the arm posture described.
- D, T1 and T2: these are not the roots of the classic Erb palsy and would not give this picture.

Final Answer: C5 and C6 ⇒ B

Answer: (B) Go Back to Q3

Q4.

Solution

Concept – the independent walking milestone: Gross-motor milestones follow a predictable order, and walking is a key late-infancy marker.

Step 1 – read the timeline: The arrow **X** points to the 12-month mark on the age axis.

Step 2 – match the milestone: Most normal children walk independently by **12 to 15 months**; walking is still considered within normal limits up to 18 months.

Why the other options are wrong:

- B, 6 months: at this age a baby sits with support and rolls over, well before walking.
- C, 24 months: by 2 years a child runs and climbs stairs, well past first independent steps.
- D, 3 months: at this age the baby only holds the head steady; walking is far off.

Final Answer: About 12 to 15 months ⇒ A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – pellagra and the '3 Ds': A maize-heavy diet lacks a specific B-vitamin and causes a memorable triad.

Step 1 – name the deficiency: Dermatitis, diarrhoea and dementia, the '3 Ds' of pellagra, are caused by deficiency of **niacin (vitamin B3)**.

Step 2 – why maize: Maize is low in available niacin and in tryptophan (a niacin precursor), so a diet based on it without lime treatment predisposes to pellagra.

Why the other options are wrong:

- A, thiamine (B1): its deficiency causes beri-beri and Wernicke encephalopathy, not the photosensitive dermatitis of pellagra.
- C, vitamin B12: its deficiency causes megaloblastic anaemia and neuropathy, not the 3 Ds.
- D, folate (B9): its deficiency causes megaloblastic anaemia, not pellagra.

Final Answer: Niacin (vitamin B3) deficiency ⇒ B

Answer: (B) Go Back to Q5

Q6.

Solution

Concept – stunting versus wasting: The two WHO indices measure different things and are defined against different references.

Step 1 – apply the definition: Low length-for-age (below the third centile or below minus two Z-scores) with a normal weight-for-length defines **stunting**, which reflects chronic long-term undernutrition.

Step 2 – contrast with wasting: Wasting is a low weight-for-length and reflects acute recent undernutrition; here the weight-for-length is normal, so the child is stunted rather than wasted.

Why the other options are wrong:

- A, wasted: this needs a low weight-for-length, which is normal in this child.
- B, overweight: this needs a high weight-for-length, the opposite of the picture.
- C, oedematous (kwashiorkor): this needs bilateral pitting oedema, which is not described.

Final Answer: Stunted $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – DPT booster timing in the UIP schedule: After the three primary doses at 6, 10 and 14 weeks, two DPT boosters follow.

Step 1 – recall the booster ages: DPT booster 1 is due at **16 to 24 months** and DPT booster 2 at **5 to 6 years** of age.

Step 2 – the rationale: The boosters maintain protective immunity against diphtheria, pertussis and tetanus as the levels from the primary series wane through early childhood.

Why the other options are wrong:

- A, birth and 6 weeks: birth doses are BCG, OPV-0 and hepatitis B, not DPT boosters.

- B, 6, 10 and 14 weeks: these are the three *primary* pentavalent (DPT-containing) doses, not the boosters.
- C, 9 and 12 months: 9 months is the first measles-rubella dose, not a DPT booster.

Final Answer: 16 to 24 months and 5 to 6 years $\Rightarrow$ D

Answer: (D) Go Back to Q7

Q8.

Solution

Concept – pertussis (whooping cough): A paroxysmal cough with an inspiratory whoop in an unimmunised infant is characteristic.

Step 1 – name the organism: The paroxysms of coughing, the high-pitched inspiratory 'whoop', post-tussive vomiting and a marked lymphocytosis are caused by **Bordetella pertussis**.

Step 2 – the clinical course: Pertussis runs through catarrhal, paroxysmal and convalescent stages, and is most dangerous (with apnoea) in young unimmunised infants.

Why the other options are wrong:

- A, Corynebacterium diphtheriae: causes a grey pharyngeal membrane and bull neck, not paroxysmal whooping.
- C, respiratory syncytial virus: causes bronchiolitis with wheeze, not the whoop and lymphocytosis.
- D, Streptococcus pyogenes: causes pharyngitis and scarlet fever, not whooping cough.

Final Answer: Bordetella pertussis $\Rightarrow$ B

Answer: (B) Go Back to Q8

Q9.

Solution

Concept – diagnosing cystic fibrosis: CF is a multisystem disease of abnormal chloride transport, and one test confirms it.

Step 1 – pick the confirmatory test: The **sweat chloride test** is the gold standard; a raised sweat chloride (usually 60 mmol/L or more) confirms cystic fibrosis.

Step 2 – link to the picture: Recurrent chest infections, steatorrhoea from pancreatic insufficiency, failure to thrive and salty skin all fit CF, in which defective CFTR raises sweat chloride.

Why the other options are wrong:

- A, serum IgE: helps in allergy and aspergillosis, not in confirming CF.
- B, chest X-ray: shows changes but is non-specific and cannot confirm the diagnosis.
- D, complete blood count: is non-specific and does not diagnose CF.

Final Answer: Sweat chloride test ⇒ C

Answer: (C) Go Back to Q9

Q10.

Solution

Concept – coarctation of the aorta: A narrowing of the aorta near the ductal site produces a characteristic pulse pattern.

Step 1 – read the schematic: The narrowing just beyond the left subclavian artery, with strong upper-limb pulses but weak, delayed femoral pulses (radio-femoral delay) and upper-limb hypertension, is diagnostic of **coarctation of the aorta**.

Step 2 – the mechanism: Blood reaches the arms normally proximal to the narrowing, but flow to the legs is reduced and delayed, so the femoral pulse is weak and late while the upper limbs are hypertensive.

Why the other options are wrong:

- B, patent ductus arteriosus: gives a continuous machinery murmur and bounding pulses, not radio-femoral delay.
- C, atrial septal defect: gives fixed splitting of S2, not a pulse discrepancy between arms and legs.
- D, mitral stenosis: is a valve lesion causing a diastolic murmur, unrelated to radio-femoral delay.

Final Answer: Coarctation of the aorta ⇒ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept – bronchopulmonary dysplasia (BPD): Chronic lung disease of prematurity follows prolonged ventilation and oxygen exposure.

Step 1 – apply the definition: An ex-preterm infant who remains oxygen-dependent beyond 36 weeks postmenstrual age, with a chronic oxygen requirement and typical X-ray changes, has **bronchopulmonary dysplasia**.

Step 2 – the mechanism: Immature lungs injured by barotrauma, oxygen toxicity and inflammation heal with impaired alveolar growth, leaving the persistent oxygen need that defines BPD.

Why the other options are wrong:

- A, acute bronchiolitis: is an acute viral infection, not a chronic oxygen dependence from prematurity.
- B, cystic fibrosis: is an inherited disease with steatorrhoea and salty sweat, not oxygen dependence from prematurity.
- C, foreign body aspiration: causes sudden focal signs, not a chronic diffuse oxygen requirement.

Final Answer: Bronchopulmonary dysplasia $\Rightarrow$ D

Answer: (D) Go Back to Q11

Q12.

Solution

Concept – haemophilia A: An X-linked bleeding disorder from a clotting-factor deficiency affects boys through carrier mothers.

Step 1 – read the pedigree and labs: A carrier mother, affected sons and unaffected daughters, together with recurrent haemarthrosis, a prolonged APTT that corrects on mixing and a low factor VIII level, define **X-linked recessive haemophilia A (factor VIII deficiency)**.

Step 2 – the mechanism: The factor VIII gene lies on the X chromosome, so a female carrier passes the affected X to half her sons, who lack a second X to compensate and therefore bleed.

Why the other options are wrong:

- B, von Willebrand disease: is usually autosomal dominant and affects both sexes with mucocutaneous bleeding and a prolonged bleeding time.

- C, autosomal recessive iron deficiency: iron deficiency is nutritional, not an inherited clotting disorder, and does not fit this pedigree.
- D, X-linked dominant vitamin K deficiency: vitamin K deficiency is acquired, not X-linked dominant, and would prolong both PT and APTT.

Final Answer: X-linked recessive haemophilia A $\Rightarrow$ A

Answer: (A) Go Back to Q12

Q13.

Solution

Concept – phenylketonuria (PKU): A treatable inborn error of amino-acid metabolism is caught on newborn screening.

Step 1 – name the condition: A raised blood phenylalanine, with untreated intellectual disability, a musty odour and fair pigmentation, indicates **phenylketonuria**, managed by a **phenylalanine-restricted diet**.

Step 2 – the mechanism: Deficiency of phenylalanine hydroxylase lets phenylalanine accumulate and damage the developing brain, so early dietary restriction of phenylalanine prevents the disability.

Why the other options are wrong:

- A, galactosaemia: presents with jaundice and cataracts and is treated by removing lactose or galactose, but it does not raise phenylalanine.
- C, maple syrup urine disease: raises branched-chain amino acids with a sweet-smelling urine and is not treated with insulin.
- D, congenital hypothyroidism: is screened by TSH and treated with levothyroxine, not by restricting phenylalanine.

Final Answer: Phenylketonuria, phenylalanine-restricted diet $\Rightarrow$ B

Answer: (B) Go Back to Q13

Q14.

Solution

Concept – organophosphate poisoning: Cholinesterase inhibition produces a cholinergic crisis with a specific antidote.

Step 1 – pick the antidote: Pinpoint pupils, salivation, lacrimation, bronchorrhoea, fasciculations and bradycardia are the cholinergic toxidrome of

organophosphates; the first specific antidote is **atropine**.

Step 2 – the mechanism: Organophosphates inhibit acetylcholinesterase, flooding receptors with acetylcholine; atropine blocks the muscarinic effects (drying secretions and raising the heart rate), and pralidoxime is added to reactivate the enzyme.

Why the other options are wrong:

- A, naloxone: reverses opioids, which cause pinpoint pupils but not the wet cholinergic picture.
- B, flumazenil: reverses benzodiazepines, not organophosphates.
- D, activated charcoal alone: may reduce absorption but is not the specific antidote and does not reverse the crisis.

Final Answer: Atropine $\Rightarrow$ C

Answer: (C) Go Back to Q14

Q15.

Solution

Concept – paracetamol (acetaminophen) overdose: A toxic metabolite depletes glutathione and injures the liver, but there is a specific antidote.

Step 1 – pick the antidote: For a paracetamol level above the treatment line on the nomogram, the specific hepatoprotective antidote is **N-acetylcysteine**.

Step 2 – the mechanism: The toxic metabolite NAPQI accumulates once glutathione is exhausted; N-acetylcysteine replenishes glutathione and detoxifies NAPQI, preventing hepatic necrosis when given early.

Why the other options are wrong:

- A, deferoxamine: is the antidote for iron poisoning, not paracetamol.
- B, vitamin K: reverses warfarin-related bleeding, not paracetamol toxicity.
- D, sodium bicarbonate: is used in salicylate or tricyclic overdose, not for paracetamol.

Final Answer: N-acetylcysteine $\Rightarrow$ C

Answer: (C) Go Back to Q15

Answer Key

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