INI CET Paediatrics

Sample Paper – 9

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 healthy term newborn loses some weight in the first few days of life before regaining it. What is the maximum physiological weight loss that is still considered normal, and by when should the birth weight be regained?

(A) Up to 20 percent, regained by day 3 to 5

(B) Up to 15 percent, regained by day 21 to 28

(C) Up to 7 to 10 percent, regained by day 10 to 14

(D) No weight loss is ever normal in a term newborn

Q2. Delayed cord clamping (waiting at least 1 to 3 minutes before clamping

the umbilical cord in a vigorous newborn) is now recommended chiefly because it:

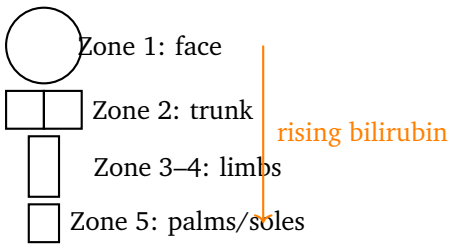
(A) Reduces the risk of neonatal jaundice

(B) Prevents transient tachypnoea of the newborn

(C) Lowers the maternal risk of postpartum haemorrhage

(D) Boosts the infant's iron stores and reduces later iron deficiency anaemia

Q3. Neonatal jaundice spreads over the body in a predictable head-to-foot (cephalocaudal) pattern, the basis of Kramer's rule. The schematic below shades the zones as bilirubin rises. Which sequence correctly describes how visible jaundice progresses?



(A) Palms and soles first, then the face last

(B) Limbs first, then the trunk, then the face

(C) Trunk first, then the face, then the palms

(D) Face first, then the trunk and limbs, and palms and soles last

Growth, Development and Nutrition

Q4. Periconceptional supplementation of one particular vitamin sharply reduces the risk of neural tube defects such as spina bifida, and its deficiency also causes a megaloblastic anaemia. That vitamin is:

(A) Vitamin C (ascorbic acid)

(B) Folic acid (folate)

(C) Vitamin K

(D) Vitamin D

Q5. An infant weaned onto a diet poor in one trace element develops a scaly, crusted rash around the mouth, eyes and perineum (acrodermatitis), diarrhoea, hair loss and poor wound healing. The deficient element is:

(A) Iodine

(B) Copper

(C) Selenium

(D) Zinc

Q6. A child growing up in an area where the drinking water has a very high fluoride content develops chalky-white to brownish mottling and pitting of the tooth enamel. This is caused by:

(A) Excess fluoride (dental fluorosis)

(B) Deficiency of fluoride

(C) Excess of vitamin D

(D) Deficiency of calcium alone

Immunisation and Infectious Disease

Q7. A 7-year-old has a week of stepwise rising fever, abdominal discomfort, relative bradycardia and mild hepatosplenomegaly. Which single investigation is the gold standard for confirming enteric (typhoid) fever in the first week of illness?

(A) Stool culture

(B) Widal (agglutination) test

(C) Blood culture for Salmonella typhi

(D) Urine culture

Q8. A 3-year-old has fever for 6 days with bilateral non-purulent conjunctivitis, cracked red lips with a strawberry tongue, a polymorphous rash, swelling of the hands and feet and a single enlarged cervical lymph node. This clinical picture is diagnostic of Kawasaki disease. Which is the most important complication to screen for?

(A) Coronary artery aneurysm

(B) Chronic kidney disease

(C) Aplastic anaemia

(D) Sensorineural deafness

Respiratory and Cardiovascular Paediatrics

Q9. A 2-month-old unimmunised infant has paroxysms of coughing followed by a whooping inspiration and post-tussive vomiting, and is now having brief episodes where breathing stops. In young infants with pertussis (whooping cough), which is the most important life-threatening complication to anticipate?

(A) Apnoea (and secondary pneumonia)

(B) Peptic ulcer disease

(C) Deep vein thrombosis

(D) Acute glomerulonephritis

Q10. An 8-year-old has a chronic productive (wet) cough lasting several months, recurrent chest infections and coarse crepitations that clear partly with coughing, with clubbing of the fingers. The most likely diagnosis is:

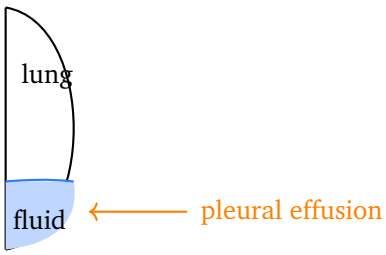
(A) Simple allergic rhinitis

(B) Acute viral bronchiolitis

(C) Bronchiectasis

(D) Exercise-induced asthma only

Q11. A child with pneumonia develops a pleural effusion. The schematic shows fluid collecting in the pleural space at the lung base. Using the basic idea behind Light's criteria, which finding would indicate that the fluid is an **exudate** rather than a transudate?



(A) A low pleural fluid protein and low LDH

(B) Fluid that is clear and straw-coloured with very low protein

(C) A high pleural-fluid-to-serum protein ratio (above 0.5) or high fluid LDH

(D) An identical protein content in fluid and serum with no cells

Haematology, Genetics and Systemic Disease

Q12. A 3-year-old is brought with a smooth, painless mass in one flank noticed while bathing, and a raised blood pressure; the mass does not cross the midline. The commonest primary renal malignancy of childhood, most likely here, is:

(A) Neuroblastoma

(B) Wilms tumour (nephroblastoma)

(C) Renal cell carcinoma

(D) Polycystic kidney disease

Q13. A 1-year-old fed largely on cow's milk has a microcytic hypochromic anaemia with low serum ferritin and a raised red-cell distribution width. This is the commonest nutritional anaemia of childhood. It is due to deficiency of:

(A) Vitamin B12

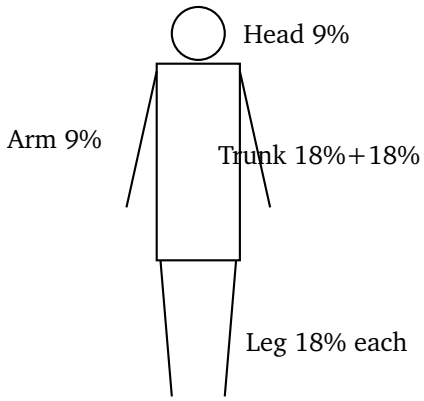
(B) Iron

(C) Folate

(D) Copper

Emergency, Fluids and Electrolytes

Q14. A child is being resuscitated after burns. The Parkland formula estimates the fluid to give in the first 24 hours from the burnt body surface area. Using the rule-of-nines schematic below to gauge the burnt area, the Parkland formula gives a total 24-hour crystalloid volume of:



(A) 4 mL × body weight in kg × percentage burn, half in the first 8 hours

(B) 2 mL × body weight × percentage burn, all in the first hour

(C) 10 mL × body weight × percentage burn, over 48 hours

(D) 1 mL × body weight × percentage burn, once daily

Q15. A 4-year-old with fever, neck stiffness, photophobia and a bulging picture of bacterial meningitis needs antibiotics started at once, before culture results. The most appropriate empirical first-line agent is:

(A) Oral amoxicillin

(B) A third-generation cephalosporin such as ceftriaxone

(C) Oral metronidazole

(D) Gentamicin alone

Detailed Solutions

Q1.

Solution

Concept – physiological weight loss of the newborn: Every healthy newborn loses a little weight in the first days before feeding is fully established.

Step 1 – recall the normal limit: A term baby may lose up to about **7 to 10 percent** of birth weight over the first 3 to 5 days, mainly from loss of extracellular fluid and passage of meconium.

Step 2 – recall the recovery: The birth weight is normally regained by **day 10 to 14** of life once breastfeeding is established.

Why the other options are wrong:

- A, up to 20 percent: this degree of loss is excessive and points to a feeding problem or dehydration.
- B, up to 15 percent by day 21 to 28: both the amount and the timing are outside the physiological range.
- D, no weight loss is normal: some early loss is entirely expected and physiological.

Final Answer: Up to 7 to 10 percent, regained by day 10 to 14 $\Rightarrow$ C

Answer: (C) Go Back to Q1

Q2.

Solution

Concept – benefit of delayed cord clamping: Waiting before clamping the cord lets extra blood flow from the placenta to the baby.

Step 1 – what the placental transfusion does: Delaying clamping by 1 to 3 minutes transfers an additional volume of blood, raising the newborn's haemoglobin and, importantly, its **iron stores**.

Step 2 – the downstream benefit: Better iron stores at birth reduce the risk of **iron deficiency anaemia** in later infancy, which is the main reason the practice is now recommended for vigorous babies.

Why the other options are wrong:

- A, reduces jaundice: delayed clamping tends to *increase* the bilirubin load slightly, not reduce jaundice.

- B, prevents transient tachypnoea: this is unrelated to the timing of cord clamping.
- C, lowers maternal postpartum haemorrhage: PPH is prevented by active management of the third stage (oxytocin), not by delayed clamping.

Final Answer: Boosts iron stores and reduces later iron deficiency anaemia $\Rightarrow$ D

Answer: (D) Go Back to Q2

Q3.

Solution

Concept – Kramer's rule and cephalocaudal spread of jaundice: Neonatal jaundice appears first at the head and descends towards the feet as serum bilirubin rises.

Step 1 – read the zones: Kramer divided the body into five zones. Zone 1 is the face, zone 2 the trunk above the umbilicus, zones 3 and 4 the lower trunk and limbs, and zone 5 the palms and soles.

Step 2 – apply the direction: Jaundice is seen first on the **face**, then spreads down the **trunk and limbs**, and the **palms and soles** are involved last, when bilirubin is highest.

Why the other options are wrong:

- A, palms and soles first: this reverses the true direction; palms and soles are affected last.
- B, limbs before the trunk and face: the face is involved before the limbs, not after.
- C, trunk before the face: the face (zone 1) precedes the trunk, so this order is wrong.

Final Answer: Face first, then trunk and limbs, palms and soles last $\Rightarrow$ D

Answer: (D) Go Back to Q3

Q4.

Solution

Concept – folate and neural tube defects: One B vitamin taken around conception protects the developing spinal cord.

Step 1 – name the vitamin: Folic acid (folate) taken periconceptionally sharply lowers the risk of neural tube defects such as spina bifida and anencephaly.

Step 2 – the other clue: Folate is also needed for DNA synthesis, so its deficiency causes a *megaloblastic* (macrocytic) anaemia, matching the second half of the question.

Why the other options are wrong:

- A, vitamin C: deficiency causes scurvy, and it does not prevent neural tube defects.
- C, vitamin K: deficiency causes haemorrhagic disease of the newborn, unrelated to spina bifida.
- D, vitamin D: deficiency causes rickets, not neural tube defects or megaloblastic anaemia.

Final Answer: Folic acid (folate) $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q4

Q5.

Solution

Concept – zinc deficiency (acrodermatitis enteropathica): A specific rash around the body orifices and limbs points to one trace element.

Step 1 – match the picture: A scaly, crusted rash around the mouth, eyes and perineum (an *acral* and periorificial distribution) with diarrhoea, alopecia and poor wound healing is the classic picture of **zinc** deficiency, called acrodermatitis enteropathica.

Step 2 – why: Zinc is a cofactor for many enzymes involved in epithelial repair and immune function, so its lack damages skin, gut and hair.

Why the other options are wrong:

- A, iodine: deficiency causes goitre and hypothyroidism, not this rash.
- B, copper: deficiency causes anaemia, neutropenia and Menkes kinky-hair disease, a different picture.

- C, selenium: deficiency causes cardiomyopathy (Keshan disease), not perioral dermatitis.

Final Answer: Zinc deficiency $\Rightarrow$ D

Answer: (D) Go Back to Q5

Q6.

Solution

Concept – dental fluorosis from excess fluoride: Too much fluoride during tooth formation stains and pits the enamel.

Step 1 – link cause and sign: Chronic ingestion of **excess fluoride** (typically from drinking water above about 1.5 mg/L) while the permanent teeth are forming causes mottled, chalky-white to brownish, pitted enamel, known as dental fluorosis.

Step 2 – the balance: A small amount of fluoride strengthens enamel and prevents caries, but an excess is harmful and, in severe cases, also affects bone (skeletal fluorosis).

Why the other options are wrong:

- B, deficiency of fluoride: this increases dental caries, but it does not cause mottling.
- C, excess vitamin D: causes hypercalcaemia and metastatic calcification, not enamel mottling.
- D, deficiency of calcium alone: causes rickets and poor mineralisation, not the specific fluorotic mottling pattern.

Final Answer: Excess fluoride (dental fluorosis) $\Rightarrow$ A

Answer: (A) Go Back to Q6

Q7.

Solution

Concept – diagnosing enteric (typhoid) fever: The best test changes with the week of illness, and blood is the key sample early on.

Step 1 – pick the gold standard: Blood culture for Salmonella typhi is the gold standard and is most positive in the *first week* of illness, exactly when this child presents.

Step 2 – the clinical fit: Stepwise (stepladder) fever, relative bradycardia and hepatosplenomegaly are the classic features that prompt the blood culture.

Why the other options are wrong:

- A, stool culture: becomes positive later (second to third week), so it is less useful early.
- B, Widal test: only detects antibodies, is non-specific, and is often negative or falsely positive in the first week.
- D, urine culture: also positive later in the illness and less sensitive than blood culture.

Final Answer: Blood culture for Salmonella typhi ⇒ C

Answer: (C) Go Back to Q7

Q8.

Solution

Concept – Kawasaki disease and its cardiac risk: A febrile vasculitis of young children threatens the coronary arteries above all.

Step 1 – confirm the diagnosis: Fever for 5 or more days plus conjunctivitis, mucosal changes (cracked lips, strawberry tongue), a rash, extremity changes and cervical lymphadenopathy meet the criteria for **Kawasaki disease**.

Step 2 – name the key complication: The most feared complication is a **coronary artery aneurysm**, which is why timely intravenous immunoglobulin and echocardiography are essential.

Why the other options are wrong:

- B, chronic kidney disease: not a recognised major complication of Kawasaki disease.
- C, aplastic anaemia: unrelated; Kawasaki disease typically causes a reactive thrombocytosis, not marrow failure.
- D, sensorineural deafness: not a feature of Kawasaki disease.

Final Answer: Coronary artery aneurysm ⇒ A

Answer: (A) Go Back to Q8

Q9.

Solution

Concept – complications of pertussis in young infants: Whooping cough is most dangerous in unimmunised babies under a few months old.

Step 1 – identify the main danger: In a young infant, the most important life-threatening complications are **apnoea** (pauses in breathing during or after paroxysms) and secondary **pneumonia**.

Step 2 – why it matters: These infants may need hospital monitoring because apnoea and hypoxia, not the cough itself, are the usual cause of death.

Why the other options are wrong:

- B, peptic ulcer disease: not a complication of pertussis.
- C, deep vein thrombosis: unrelated to whooping cough in infants.
- D, acute glomerulonephritis: follows streptococcal infection, not pertussis.

Final Answer: Apnoea (and secondary pneumonia) $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q9

Q10.

Solution

Concept – childhood bronchiectasis: A long-standing wet cough with clubbing points to permanent airway dilatation.

Step 1 – read the clues: A chronic **productive (wet) cough** over months, recurrent chest infections, coarse crepitations that shift with coughing and finger **clubbing** together suggest **bronchiectasis**.

Step 2 – the mechanism: Repeated infection and inflammation permanently dilate and scar the bronchi, so they pool secretions and produce the persistent wet cough.

Why the other options are wrong:

- A, allergic rhinitis: causes sneezing and a runny nose, not a chronic wet cough with clubbing.
- B, acute viral bronchiolitis: an acute illness of infants lasting days, not months.
- D, exercise-induced asthma only: causes intermittent wheeze on exertion, not a chronic productive cough with clubbing.

Final Answer: Bronchiectasis $\Rightarrow$ C

Answer: (C) Go Back to Q10

Q11.

Solution

Concept – exudate versus transudate (Light's criteria): The protein and LDH content of pleural fluid separate an inflammatory exudate from a bland transudate.

Step 1 – recall the idea: An **exudate** results from inflammation that makes capillaries leaky, so the fluid is protein-rich. By Light's criteria it shows a pleural-fluid-to-serum **protein ratio above 0.5** or a high fluid LDH.

Step 2 – apply it here: A parapneumonic effusion in this child is inflammatory, so a high protein ratio or high LDH confirms an exudate.

Why the other options are wrong:

- A, low protein and low LDH: these describe a transudate, not an exudate.
- B, clear straw-coloured fluid with very low protein: this is the typical appearance of a transudate.
- D, identical protein with no cells: a bland, cell-free fluid matching serum is a transudate.

Final Answer: High fluid-to-serum protein ratio or high LDH $\Rightarrow$ C

Answer: (C) Go Back to Q11

Q12.

Solution

Concept – Wilms tumour (nephroblastoma): A painless flank mass in a toddler that does not cross the midline is the classic renal tumour of childhood.

Step 1 – match the picture: A smooth, painless flank mass noticed incidentally, with hypertension, in a 1-to-5-year-old is typical of **Wilms tumour (nephroblastoma)**, the commonest primary renal malignancy of childhood.

Step 2 – the clinical clue: It arises from the kidney and characteristically *does not cross the midline*, which helps separate it from other abdominal masses.

Why the other options are wrong:

- A, neuroblastoma: usually an irregular adrenal or paraspinal mass that often *crosses* the midline and is frequently painful.
- C, renal cell carcinoma: a tumour of adults, rare in young children.
- D, polycystic kidney disease: gives bilateral cystic kidneys, not a solitary painless malignant mass.

Final Answer: Wilms tumour (nephroblastoma) $\Rightarrow$ B

Answer: (B) Go Back to Q12

Q13.

Solution

Concept – iron deficiency anaemia: The commonest nutritional anaemia of childhood gives small, pale red cells.

Step 1 – name the deficiency: A microcytic hypochromic anaemia with **low serum ferritin** and a raised red-cell distribution width in a toddler fed mainly on cow's milk is classic **iron** deficiency anaemia.

Step 2 – why cow's milk: Excessive cow's milk is low in bioavailable iron and can cause occult gut blood loss, both worsening iron stores.

Why the other options are wrong:

- A, vitamin B12: deficiency causes a *macrocytic* (megaloblastic) anaemia, not microcytic.
- C, folate: also causes a macrocytic anaemia, the opposite of the picture here.
- D, copper: a rare cause of anaemia and does not fit the ferritin and dietary clues.

Final Answer: Iron deficiency $\Rightarrow$ B

Answer: (B) Go Back to Q13

Q14.

Solution

Concept – Parkland formula for burns fluid resuscitation: Fluid needs after a burn are worked out from body weight and the percentage of body surface burnt.

Step 1 – recall the formula: The Parkland formula gives a first-24-hour crystalloid volume of **4 mL** $\times$ **body weight in kg** $\times$ **percentage burn**, with **half given in the first 8 hours** and the remainder over the next 16 hours.

Step 2 – estimate the burn area: The rule-of-nines schematic (head 9%, each arm 9%, front and back of trunk 18% each, each leg 18%) is used to estimate the percentage burn that goes into the formula.

Why the other options are wrong:

- B, 2 mL all in the first hour: both the volume factor and the timing are wrong.
- C, 10 mL over 48 hours: not the Parkland formula and greatly overestimates the volume.
- D, 1 mL once daily: far too little fluid and the wrong schedule.

Final Answer: 4 mL $\times$ weight $\times$ percentage burn, half in the first 8 hours $\Rightarrow$ A

Answer: (A) Go Back to Q14

Q15.

Solution

Concept – empirical antibiotics for childhood bacterial meningitis: Treatment must start immediately and cover the likely organisms before culture results.

Step 1 – choose the agent: A **third-generation cephalosporin such as ceftriaxone** (or cefotaxime) is the empirical first-line choice, as it crosses the blood-brain barrier and covers the common causes beyond the neonatal period (pneumococcus and meningococcus).

Step 2 – why start early: Antibiotics are given at once after taking cultures because delay increases death and neurological damage; dexamethasone may be added for Haemophilus influenzae type b.

Why the other options are wrong:

- A, oral amoxicillin: oral therapy cannot achieve reliable meningitic levels and is inappropriate for this emergency.
- C, oral metronidazole: covers anaerobes, which are not the usual meningitis pathogens in children.
- D, gentamicin alone: penetrates the cerebrospinal fluid poorly and does not cover the common organisms adequately.

Final Answer: A third-generation cephalosporin such as ceftriaxone $\Rightarrow$ B

Answer: (B) Go Back to Q15

Answer Key

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