

INI CET Paediatrics

Sample Paper – 3

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 AI-IMS 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

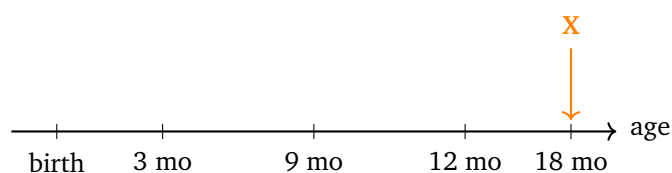
- Q1.** A term newborn with Rh haemolytic disease develops deepening jaundice on day 1. Which single finding is the strongest indication for **exchange transfusion**?
- (A) A serum bilirubin rising above the age-specific exchange threshold despite intensive phototherapy (for example cord bilirubin above 5 mg/dL with haemoglobin below 10 g/dL, or a rapid rate of rise)
- (B) Physiological jaundice first appearing on day 3
- (C) A single serum bilirubin of 10 mg/dL on day 4 in a well term baby
- (D) Mild jaundice that is already settling on phototherapy



- Q2.** Which newborn is at the **greatest** risk of neonatal hypoglycaemia (blood glucose below 45 mg/dL)?
- (A) A term, appropriate-for-gestational-age baby feeding well on demand
 - (B) A well term baby of a non-diabetic mother on day 3
 - (C) The macrosomic infant of a diabetic mother (hyperinsulinaemic state)
 - (D) A 4-day-old exclusively breastfed term baby gaining weight
- Q3.** Which statement best describes **meconium aspiration syndrome** (MAS)?
- (A) It occurs mainly in preterm infants born before 34 weeks
 - (B) It is caused by an excess of pulmonary surfactant
 - (C) The chest X-ray classically shows a uniform ground-glass, under-inflated lung
 - (D) It typically affects term or post-term infants and causes patchy infiltrates with hyperinflation, and may be complicated by persistent pulmonary hypertension of the newborn

Growth, Development and Nutrition

- Q4.** On the timeline below, the arrow **X** marks the age by which the *anterior fontanelle* normally closes in a healthy infant. That age is:



- (A) By about 3 months
 - (B) By about 6 months
 - (C) By about 9 months
 - (D) By about 18 months (usual range 9 to 18 months)
- Q5.** A 10-month-old infant fed only boiled milk presents with painful pseudoparalysis of the legs, swollen bleeding gums and subperiosteal haemorrhages. This picture of *infantile scurvy* is due to deficiency of:



- (A) Vitamin A
- (B) Vitamin D
- (C) Vitamin C (ascorbic acid)
- (D) Vitamin K

Q6. According to current WHO and Indian guidelines, complementary feeding (semisolid foods in addition to breast milk) should normally be started at:

- (A) 6 months (completed 180 days) of age
- (B) 2 months of age
- (C) 3 months of age
- (D) 12 months of age

Immunisation and Infectious Disease

Q7. The pentavalent vaccine used in India's Universal Immunisation Programme protects against which five diseases?

- (A) Diphtheria, pertussis, tetanus, hepatitis B and Haemophilus influenzae type b
- (B) Diphtheria, pertussis, tetanus, poliomyelitis and measles
- (C) Measles, mumps, rubella, varicella and hepatitis A
- (D) Tuberculosis, poliomyelitis, hepatitis B, measles and rotavirus

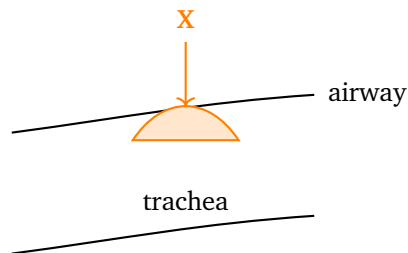
Q8. A baby born to a mother who had a febrile rash in early pregnancy has cataracts, a heart murmur and failed the newborn hearing screen. The classic **triad** of congenital rubella syndrome is:

- (A) Deafness, cleft palate and polydactyly
- (B) Sensorineural deafness, cataract and congenital heart disease (patent ductus arteriosus)
- (C) Microcephaly, seizures and periventricular calcification
- (D) Hepatosplenomegaly, jaundice and thrombocytopenia alone



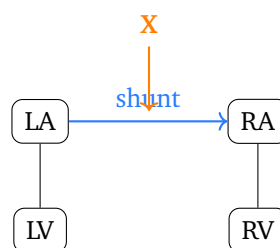
Respiratory and Cardiovascular Paediatrics

Q9. A 4-year-old has sudden high fever, drooling and a muffled voice, and sits leaning forward with the mouth open. A lateral neck X-ray shows the swollen epiglottitis marked X (the 'thumbprint sign'). The most likely diagnosis and organism are:



- (A) Viral croup due to parainfluenza virus
- (B) Bacterial tracheitis due to *Staphylococcus aureus*
- (C) Retropharyngeal abscess
- (D) Acute epiglottitis due to *Haemophilus influenzae* type b

Q10. A child has a wide, *fixed* split second heart sound with an ejection systolic murmur at the upper left sternal border. The schematic shows a left-to-right shunt at the level marked X. The lesion is:



- (A) Ventricular septal defect
- (B) Atrial septal defect
- (C) Patent ductus arteriosus
- (D) Tetralogy of Fallot

Q11. Which feature best characterises an **innocent** (functional) murmur in an otherwise well child?



- (A) A loud (grade 4 of 6) pansystolic murmur with a palpable thrill
- (B) A soft, short, low-intensity systolic murmur that changes with posture, with normal heart sounds and no other cardiac signs
- (C) A continuous machinery murmur that radiates to the back
- (D) A diastolic murmur accompanied by central cyanosis

Haematology, Genetics and Systemic Disease

- Q12.** A tall adolescent boy has small firm testes, gynaecomastia, sparse body hair and is being investigated for infertility. The most likely karyotype is:
- (A) 45,X
 - (B) 47,XYY
 - (C) 47,XXY (Klinefelter syndrome)
 - (D) 46,XY, entirely normal
- Q13.** A 7-year-old develops smoky (cola-coloured) urine, periorbital oedema and hypertension about two weeks after an untreated sore throat. The most likely diagnosis is:
- (A) Nephrotic syndrome (minimal change disease)
 - (B) Uncomplicated urinary tract infection
 - (C) Post-streptococcal acute glomerulonephritis
 - (D) Henoch-Schonlein purpura with no renal involvement

Emergency, Fluids and Electrolytes

- Q14.** A 2-year-old with acute diarrhoea is restless and irritable, has sunken eyes, drinks eagerly when offered fluid, and the skin pinch goes back slowly. Under the WHO scheme this is *some dehydration*, and the correct treatment is:
- (A) Plan A – home fluids only, with no supervised oral rehydration solution



- (B) Plan B – supervised oral rehydration solution given over about 4 hours
- (C) Plan C – immediate intravenous fluids as the first step
- (D) No rehydration; give antibiotics alone

Q15. A child is brought in with a generalised convulsion that has already lasted more than 5 minutes (status epilepticus). The recommended **first-line** drug is:

- (A) A benzodiazepine (intravenous lorazepam, or buccal/intranasal midazolam if there is no venous access)
- (B) Intravenous phenytoin as the very first drug
- (C) Intravenous phenobarbitone as the very first drug
- (D) Oral sodium valproate



Detailed Solutions**Q1.****Solution**

Concept – when haemolytic jaundice needs exchange transfusion: Exchange transfusion is reserved for severe or rapidly rising hyperbilirubinaemia that phototherapy cannot control.

Step 1 – recall the thresholds: It is indicated when the serum bilirubin crosses the hour-specific exchange line on the nomogram, or rises rapidly despite intensive phototherapy.

Step 2 – the early red flags: A cord bilirubin above 5 mg/dL, cord haemoglobin below 10 g/dL, or a rise faster than about 0.5 mg/dL per hour all point to severe haemolysis needing exchange.

Why the other options are wrong:

- B, jaundice on day 3: this timing is typical of benign physiological jaundice.
- C, bilirubin 10 mg/dL on day 4 in a well baby: this is well within the safe range and needs no exchange.
- D, mild jaundice settling on phototherapy: phototherapy is already working, so exchange is not needed.

Final Answer: Bilirubin above the exchange threshold despite phototherapy ⇒

A

Answer: (A) [Go Back to Q1](#)

Q2.**Solution**

Concept – who develops neonatal hypoglycaemia: Hypoglycaemia (blood glucose below 45 mg/dL) affects newborns with either high glucose demand or poor glucose reserves.

Step 1 – identify the highest-risk baby: The **infant of a diabetic mother** is hyperinsulinaemic, because maternal hyperglycaemia drives fetal islet-cell hyperplasia; after birth the insulin continues but the glucose supply stops.

Step 2 – the result: This macrosomic baby drops its blood glucose sharply in the first hours of life and needs early feeding and glucose monitoring.

Why the other options are wrong:



- A, term AGA baby feeding well: has normal reserves and normal insulin, so low risk.
- B, well baby of a non-diabetic mother: no hyperinsulinaemia, so not high risk.
- D, thriving breastfed 4-day-old: established feeding makes hypoglycaemia unlikely.

Final Answer: Infant of a diabetic mother ⇒

Answer: (C) [Go Back to Q2](#)

Q3.

Solution

Concept – meconium aspiration syndrome (MAS): MAS follows the aspiration of meconium-stained liquor around the time of birth.

Step 1 – who is affected: It occurs in **term or post-term** infants, in whom meconium passage before birth is common, not in the very preterm.

Step 2 – the lung picture: Aspirated meconium plugs and irritates the airways, giving patchy infiltrates with areas of hyperinflation and collapse, and it may trigger persistent pulmonary hypertension of the newborn.

Why the other options are wrong:

- A, mainly preterm before 34 weeks: wrong; MAS is a disease of term and post-term babies.
- B, surfactant excess: MAS inactivates surfactant, it is not caused by an excess.
- C, uniform ground-glass under-inflated lung: that pattern describes respiratory distress syndrome of prematurity, not MAS.

Final Answer: Term/post-term infant, patchy infiltrates with hyperinflation, may cause PPHN ⇒

Answer: (D) [Go Back to Q3](#)



Q4.

Solution

Concept – normal closure of the anterior fontanelle: The two main skull fontanelles close at different, predictable ages.

Step 1 – read the timeline: The arrow X points to the 18-month mark on the age axis.

Step 2 – apply the rule: The anterior (diamond-shaped) fontanelle normally closes by about **18 months**, with a usual range of 9 to 18 months. (The posterior fontanelle closes much earlier, by about 2 months.)

Why the other options are wrong:

- A, 3 months: far too early; the anterior fontanelle is still easily palpable then.
- B, 6 months: still open in normal infants at this age.
- C, 9 months: this is only the earliest end of the normal range, not the usual closure age.

Final Answer: By about 18 months ⇒ D

Answer: (D) [Go Back to Q4](#)

Q5.

Solution

Concept – infantile scurvy: Scurvy is the deficiency disease of ascorbic acid, and boiled or heat-treated milk destroys vitamin C.

Step 1 – match the signs: Painful pseudoparalysis (the ‘frog-leg’ posture from subperiosteal haemorrhage), swollen bleeding gums and easy bruising are classic for **vitamin C** deficiency.

Step 2 – the mechanism: Vitamin C is needed for collagen hydroxylation; without it capillaries and bone matrix are fragile, so haemorrhage and defective ossification follow.

Why the other options are wrong:

- A, vitamin A: deficiency causes night blindness and Bitot spots, not bleeding.
- B, vitamin D: deficiency causes rickets with bony deformities, not haemorrhage.
- D, vitamin K: deficiency causes bleeding, but from a coagulation defect, without the gum and subperiosteal signs of scurvy.



Final Answer: Vitamin C (ascorbic acid) deficiency $\Rightarrow$ C

Answer: (C) [Go Back to Q5](#)

Q6.

Solution

Concept – timing of complementary feeding: Breast milk alone stops meeting energy and micronutrient needs after about half a year.

Step 1 – recall the rule: Complementary (weaning) foods should begin at **6 months** (completed 180 days) while breastfeeding continues.

Step 2 – the rationale: Before 6 months the gut and kidneys are immature and early solids displace breast milk and raise infection risk; after 6 months breast milk alone leaves an energy and iron gap.

Why the other options are wrong:

- B, 2 months: far too early and increases the risk of diarrhoea and allergy.
- C, 3 months: still too early; exclusive breastfeeding is advised up to 6 months.
- D, 12 months: too late, leading to faltering growth and micronutrient deficiency.

Final Answer: Start at 6 months (180 days) $\Rightarrow$ A

Answer: (A) [Go Back to Q6](#)

Q7.

Solution

Concept – what the pentavalent vaccine covers: The pentavalent vaccine bundles five antigens into one injection in the UIP.

Step 1 – list the five: It protects against **diphtheria, pertussis, tetanus, hepatitis B and Haemophilus influenzae type b** (DPT + HepB + Hib).

Step 2 – the schedule: It is given at 6, 10 and 14 weeks, replacing separate DPT, hepatitis B and Hib injections.

Why the other options are wrong:

- B, includes polio and measles: polio (OPV/IPV) and measles are separate vaccines, not part of pentavalent.



- C, MMR + varicella + hepatitis A: these are unrelated vaccines, none of them in pentavalent.
- D, BCG, OPV, hepatitis B, measles, rotavirus: a mix of other UIP vaccines, not the pentavalent components.

Final Answer: Diphtheria, pertussis, tetanus, hepatitis B and Hib ⇒ A

Answer: (A) [Go Back to Q7](#)

Q8.

Solution

Concept – congenital rubella syndrome (CRS): Maternal rubella in early pregnancy damages the fetus in a characteristic pattern.

Step 1 – recall the triad: The classic triad is **sensorineural deafness, cataract and congenital heart disease**, most typically a patent ductus arteriosus.

Step 2 – the timing link: The earlier in pregnancy the infection occurs, the more severe the defects, because organogenesis is disrupted.

Why the other options are wrong:

- A, cleft palate and polydactyly: these are not features of CRS.
- C, microcephaly with periventricular calcification: this pattern is typical of congenital cytomegalovirus, not rubella.
- D, hepatosplenomegaly and jaundice alone: these are non-specific ‘blueberry muffin’ signs and do not form the defining triad.

Final Answer: Deafness, cataract and congenital heart disease (PDA) ⇒ B

Answer: (B) [Go Back to Q8](#)

Q9.

Solution

Concept – acute epiglottitis: A rapidly progressive supraglottic infection is a paediatric airway emergency.

Step 1 – read the clues: High fever, drooling, a muffled ‘hot-potato’ voice and the tripod (leaning-forward) posture, with a lateral neck X-ray showing the swollen epiglottis (the ‘thumbprint sign’), point to **acute epiglottitis**.

Step 2 – name the organism: The classic cause is **Haemophilus influenzae type b**, which is why Hib immunisation has made the disease much rarer.



Why the other options are wrong:

- A, viral croup: gives a barking cough and the 'steeple sign', not drooling or a thumbprint sign.
- B, bacterial tracheitis: causes a toxic child with a productive cough, without the classic epiglottic thumbprint.
- C, retropharyngeal abscess: shows widening of the prevertebral soft tissue, not a thumbprint epiglottis.

Final Answer: Acute epiglottitis due to *Haemophilus influenzae* type b $\Rightarrow$ **D**

Answer: (D) [Go Back to Q9](#)

Q10.

Solution

Concept – atrial septal defect (ASD): A left-to-right shunt at atrial level produces a hallmark auscultatory sign.

Step 1 – read the schematic: The arrow X marks a defect in the atrial septum, with blood shunting from the left atrium to the right atrium.

Step 2 – link to the sign: The extra right-heart volume delays pulmonary valve closure equally in inspiration and expiration, giving the **wide, fixed split second heart sound** and an ejection systolic murmur of increased pulmonary flow.

Why the other options are wrong:

- A, ventricular septal defect: gives a harsh pansystolic murmur at the lower left sternal border, not a fixed split S2.
- C, patent ductus arteriosus: gives a continuous machinery murmur, not a fixed split.
- D, tetralogy of Fallot: is cyanotic with an ejection murmur from pulmonary stenosis, not a fixed split S2.

Final Answer: Atrial septal defect $\Rightarrow$ **B**

Answer: (B) [Go Back to Q10](#)



Q11.

Solution

Concept – innocent (functional) murmurs: Most childhood murmurs are benign and need no treatment.

Step 1 – list the reassuring features: An innocent murmur is **soft, short and systolic**, low in intensity (grade 1 to 2 of 6), varies with posture or respiration, and comes with normal heart sounds and no other cardiac signs.

Step 2 – the rule of thumb: The ‘seven S’s’ (soft, systolic, short, single, small, sweet, sensitive to position) all describe an innocent murmur.

Why the other options are wrong:

- A, loud grade 4/6 pansystolic murmur with a thrill: a thrill and loudness signal an organic (pathological) murmur.
- C, continuous machinery murmur: this is the murmur of a patent ductus arteriosus, a pathological lesion.
- D, diastolic murmur with cyanosis: any diastolic murmur, or cyanosis, is always pathological.

Final Answer: Soft, short, posture-varying systolic murmur with normal heart sounds ⇒ **B**

Answer: (B) [Go Back to Q11](#)

Q12.

Solution

Concept – Klinefelter syndrome: The commonest sex-chromosome disorder in males follows one extra X chromosome.

Step 1 – read the clues: A tall boy with small firm testes, gynaecomastia, sparse body hair and infertility fits **Klinefelter syndrome, karyotype 47,XXY**.

Step 2 – the mechanism: The extra X causes primary testicular failure (hypergonadotropic hypogonadism), giving low testosterone, azoospermia and the eunuchoid body proportions.

Why the other options are wrong:

- A, 45,X: this is Turner syndrome, seen in phenotypic girls, not boys.
- B, 47,YYY: usually a tall male of normal fertility, without small testes or gynaecomastia.



- D, normal 46,XY: cannot explain the small testes, gynaecomastia and infertility.

Final Answer: 47,XXY (Klinefelter syndrome) ⇒

Answer: (C) [Go Back to Q12](#)

Q13.

Solution

Concept – post-streptococcal acute glomerulonephritis (PSGN): An immune-mediated nephritis follows a streptococcal infection after a latent period.

Step 1 – read the clues: Cola-coloured (haematuric) urine, periorbital oedema and hypertension about **two weeks** after a sore throat make up the nephritic syndrome of PSGN.

Step 2 – the mechanism: Immune complexes from nephritogenic group A streptococci deposit in the glomeruli; investigations show a raised ASO titre and a low C3 complement.

Why the other options are wrong:

- A, minimal change nephrotic syndrome: gives heavy proteinuria and generalised oedema, not haematuria and hypertension.
- B, urinary tract infection: causes dysuria and fever, not the nephritic triad after a sore throat.
- D, Henoch-Schonlein purpura with no renal involvement: by definition has no nephritis, and would show a palpable purpuric rash.

Final Answer: Post-streptococcal acute glomerulonephritis ⇒

Answer: (C) [Go Back to Q13](#)

Q14.

Solution

Concept – the WHO diarrhoea treatment plans: The degree of dehydration decides which of Plans A, B or C is used.

Step 1 – classify the child: Restlessness or irritability, sunken eyes, eager drinking and a skin pinch that goes back slowly define **some dehydration**.

Step 2 – match the plan: Some dehydration is treated with **Plan B:** supervised oral rehydration solution, about 75 mL/kg over 4 hours, then reassessment.



Why the other options are wrong:

- A, Plan A: this is for *no* dehydration, managed with extra home fluids and zinc.
- C, Plan C: this is for *severe* dehydration (lethargy, unable to drink), needing immediate intravenous fluids.
- D, antibiotics alone: rehydration is the priority, and most acute watery diarrhoea needs no antibiotic.

Final Answer: Some dehydration $\Rightarrow$ Plan B $\Rightarrow$ **B**

Answer: (B) [Go Back to Q14](#)

Q15.

Solution

Concept – first-line drug in status epilepticus: A convulsion lasting more than 5 minutes is treated as status epilepticus and stopped urgently.

Step 1 – name the first drug: The first-line agent is a **benzodiazepine** – intravenous lorazepam, or buccal or intranasal midazolam if there is no venous access.

Step 2 – the escalation: If seizures persist after benzodiazepine doses, a second-line drug (for example intravenous phenytoin, fosphenytoin, levetiracetam or valproate) is added.

Why the other options are wrong:

- B, phenytoin first: phenytoin is a *second-line* drug, given after benzodiazepines.
- C, phenobarbitone first: also a later-line agent, not the initial choice in a child.
- D, oral valproate: far too slow to act and impractical in an actively convulsing child.

Final Answer: A benzodiazepine (lorazepam or midazolam) $\Rightarrow$ **A**

Answer: (A) [Go Back to Q15](#)



Answer Key

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

