INI CET Paediatrics

Sample Paper – 10

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 preterm baby born at 28 weeks develops grunting, tachypnoea and a ground-glass appearance with air bronchograms on chest X-ray. Regarding exogenous surfactant replacement therapy for respiratory distress syndrome, which statement is correct?

(A) It is given as a single intramuscular injection into the thigh

(B) It is given as a slow intravenous infusion over 24 hours

(C) It is instilled directly into the trachea through the endotracheal tube

(D) It is delivered only as an oral suspension by nasogastric tube

Q2. A term neonate develops a watery then mucopurulent discharge from

both eyes on day 8 of life, having been well at birth. The most likely cause of this neonatal conjunctivitis is:

(A) Chemical irritation from silver nitrate drops

(B) Neisseria gonorrhoeae acquired at delivery

(C) Chlamydia trachomatis with onset around day 5 to 14

(D) Herpes simplex virus dendritic keratitis

Q3. Neonatal hypocalcaemia is classified by its timing of onset. Early neonatal hypocalcaemia is best defined as hypocalcaemia occurring:

(A) Within the first 72 hours of life

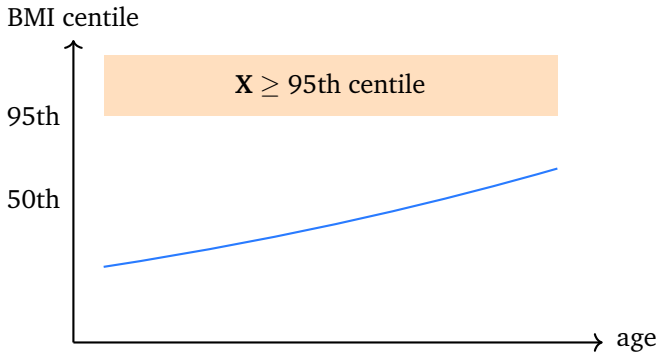
(B) Only after the first two weeks of life

(C) Exclusively in the second month of life

(D) Only at the time of puberty

Growth, Development and Nutrition

Q4. On the BMI-for-age chart below, the shaded band marked **X** shows the zone a child enters when classified as *obese*. According to the standard paediatric definition, obesity is a BMI-for-age at or above:



(A) The 95th percentile of BMI-for-age

(B) The 50th percentile of BMI-for-age

(C) The 3rd percentile of BMI-for-age

(D) The 10th percentile of BMI-for-age

Q5. A 5-month-old infant, when pulled to sit from lying, still shows the head falling backwards (persistent head lag). This finding at this age most likely signifies:

(A) A completely normal finding needing no attention

(B) A red flag suggesting hypotonia or delayed motor development

(C) Definite evidence of visual impairment

(D) A normal newborn reflex that is expected to persist for life

Q6. An infant who searches for a toy after it has been fully hidden under a cloth has acquired a cognitive milestone that normally appears at about 9 months of age. This milestone is:

(A) Social smile

(B) Stranger anxiety only

(C) Pincer grasp

(D) Object permanence

Immunisation and Infectious Disease

Q7. A 3-year-old presents with fever, painful oral ulcers and vesicles on the palms, soles and buttocks. This hand-foot-and-mouth disease is most commonly caused by:

(A) Coxsackievirus A16

(B) Varicella zoster virus

(C) Measles virus

(D) Respiratory syncytial virus

Q8. A 6-year-old develops a bright red rash over both cheeks that looks as if the face has been slapped, followed by a lacy reticular rash on the limbs. This erythema infectiosum (fifth disease) is caused by:

(A) Rubella virus

(B) Parvovirus B19

(C) Streptococcus pyogenes

(D) Human herpesvirus 6

Respiratory and Cardiovascular Paediatrics

Q9. A 12-year-old with a past history of untreated sore throats presents with exertional breathlessness and a low-pitched rumbling mid-diastolic murmur at the apex. This chronic rheumatic heart disease most classically produces:

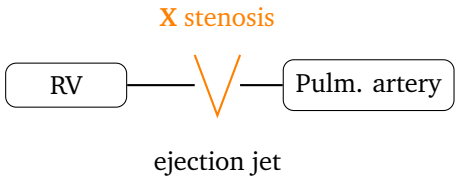
(A) Aortic regurgitation only

(B) Pulmonary atresia

(C) Tricuspid regurgitation only

(D) Mitral stenosis

Q10. The schematic shows blood being forced through a narrowed valve during ventricular contraction, producing the murmur marked **X**. In isolated pulmonary valve stenosis, the characteristic murmur is:



(A) A continuous machinery murmur

(B) A mid-diastolic rumble

(C) A pansystolic murmur at the apex

(D) An ejection systolic murmur at the upper left sternal border

Q11. A cyanotic newborn is found to have a single functioning ventricle picture, and the electrocardiogram shows striking left-axis deviation with a small or absent right ventricle. The most likely cyanotic congenital lesion is:

(A) Atrial septal defect

(B) Tricuspid atresia

(C) Isolated ventricular septal defect

(D) Patent ductus arteriosus

Haematology, Genetics and Systemic Disease

Q12. A 2-year-old presents with an irregular abdominal mass crossing the midline, weight loss and raised urinary vanillylmandelic acid (VMA) and catecholamines. This tumour arising from the adrenal medulla is:

(A) Wilms tumour

(B) Neuroblastoma

(C) Hepatoblastoma

(D) Acute lymphoblastic leukaemia

Q13. A parent notices a white reflex instead of the normal red reflex in a toddler's eye on a photograph. This leukocoria, caused by mutation of the RB1 gene, is the hallmark of:

(A) Retinoblastoma

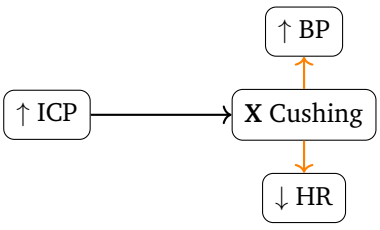
(B) Congenital cataract from rubella

(C) Vitamin A deficiency

(D) Simple refractive error

Emergency, Fluids and Electrolytes

Q14. The flow diagram shows the body's response marked **X** to a dangerous rise in intracranial pressure. Which combination of signs indicates raised intracranial pressure in a child?



(A) Low blood pressure with a fast pulse and a sunken fontanelle

(B) A normal conscious level with brisk pupillary reactions

(C) Rising blood pressure, slow pulse and a bulging anterior fontanelle

(D) Warm well-perfused peripheries with a rapid regular pulse

Q15. A 4-year-old is pulled unconscious and not breathing from a swimming pool. Regarding the management of paediatric drowning (near-drowning), the most important immediate priority is:

(A) To perform abdominal thrusts to expel swallowed water first

(B) To give oral warm fluids to correct hypothermia at once

(C) To open the airway and start rescue breathing and CPR without delay

(D) To wait for spontaneous recovery before any intervention

Detailed Solutions

Q1.

Solution

Concept – exogenous surfactant replacement therapy: Preterm respiratory distress syndrome is caused by surfactant deficiency, so replacing surfactant is a cornerstone of treatment.

Step 1 – recall the route: Exogenous surfactant is a liquid preparation that must reach the alveoli, so it is instilled **directly into the trachea** through the endotracheal tube.

Step 2 – the effect: Once delivered it spreads across the alveolar surface, lowers surface tension, prevents alveolar collapse and rapidly improves oxygenation and lung compliance.

Why the other options are wrong:

- A, intramuscular injection: surfactant cannot act if given into muscle; it must reach the airway.
- B, intravenous infusion: an intravenous route would not deliver surfactant to the alveolar lining.
- D, oral nasogastric suspension: swallowed surfactant would enter the gut, not the lungs.

Final Answer: Instilled directly into the trachea $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q1

Q2.

Solution

Concept – timing of neonatal conjunctivitis: The day of onset of a neonatal eye discharge points to the likely organism.

Step 1 – read the timing: A discharge starting around **day 5 to 14** of life, after an initially well baby, is typical of **Chlamydia trachomatis** conjunctivitis (inclusion conjunctivitis).

Step 2 – the mechanism: The organism is acquired from the birth canal, and its longer incubation explains the later onset compared with gonococcal disease.

Why the other options are wrong:

- A, chemical irritation: from prophylactic drops appears within the first day

or two and settles quickly.
- B, gonococcal: presents earlier, around day 2 to 5, with a profuse purulent discharge.
- D, herpes simplex: causes keratitis with vesicles and is less common, not the classic day 5 to 14 picture.

Final Answer: Chlamydia trachomatis, onset day 5 to 14 $\Rightarrow$ C

Answer: (C) Go Back to Q2

Q3.

Solution

Concept – early versus late neonatal hypocalcaemia: Neonatal hypocalcaemia is divided by its timing, which points to different causes.

Step 1 – define early onset: Early neonatal hypocalcaemia occurs **within the first 72 hours** of life, often in preterm babies, infants of diabetic mothers or those with birth asphyxia.

Step 2 – contrast with late onset: Late neonatal hypocalcaemia appears after the first three days to the end of the first week, classically linked to high-phosphate feeds or maternal vitamin D deficiency.

Why the other options are wrong:

- B, only after two weeks: this is far too late to be called early onset.
- C, exclusively in the second month: this is outside the neonatal window entirely.
- D, only at puberty: hypocalcaemia here is unrelated to the neonatal classification.

Final Answer: Within the first 72 hours of life $\Rightarrow$ A

Answer: (A) Go Back to Q3

Q4.

Solution

Concept – BMI-for-age definition of childhood obesity: In children, obesity is defined against age and sex reference charts rather than a fixed BMI number.

Step 1 – read the chart: The shaded band **X** sits at and above the 95th centile line on the BMI-for-age curve.

Step 2 – apply the cut-off: Childhood obesity is defined as a BMI-for-age at or above the **95th percentile**, while overweight is between the 85th and 95th percentiles.

Why the other options are wrong:

- B, 50th percentile: this is the median, a completely normal BMI.
- C, 3rd percentile: this lies at the low end and suggests underweight, not obesity.
- D, 10th percentile: also a low-normal value, nowhere near the obesity cut-off.

Final Answer: BMI-for-age at or above the 95th percentile $\Rightarrow$ A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – head control as a motor milestone: Head control is one of the earliest gross-motor milestones and its delay is an important warning sign.

Step 1 – recall the normal age: Complete head control, with no head lag on pulling to sit, is normally achieved by **3 to 4 months** of age.

Step 2 – interpret the finding: Persistent head lag in a 5-month-old is therefore a **red flag** suggesting hypotonia or delayed motor development, and warrants neurological assessment.

Why the other options are wrong:

- A, completely normal: head lag should have resolved by 3 to 4 months, so it is not normal at 5 months.
- C, visual impairment: head lag reflects motor tone, not vision.
- D, a lifelong reflex: head control is a milestone that develops, not a persistent newborn reflex.

Final Answer: A red flag suggesting hypotonia or delayed motor development $\Rightarrow$ B

Answer: (B) Go Back to Q5

Q6.

Solution

Concept – object permanence: This is the understanding that objects continue to exist even when they cannot be seen.

Step 1 – match the behaviour: An infant who uncovers a fully hidden toy demonstrates **object permanence**, which normally emerges at about 9 months of age.

Step 2 – the significance: Its appearance marks a key stage of Piaget's sensorimotor cognitive development and often coincides with stranger anxiety.

Why the other options are wrong:

- A, social smile: a much earlier social milestone at about 6 to 8 weeks.
- B, stranger anxiety alone: a related social behaviour, but it is not the act of retrieving a hidden object.
- C, pincer grasp: a fine-motor milestone, not a demonstration of object permanence.

Final Answer: Object permanence $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – hand-foot-and-mouth disease: This common childhood illness combines oral ulcers with a characteristic peripheral vesicular rash.

Step 1 – name the organism: Hand-foot-and-mouth disease is most commonly caused by **Coxsackievirus A16**, an enterovirus.

Step 2 – the clinical picture: It produces fever, painful mouth ulcers and small vesicles on the palms, soles and sometimes the buttocks, usually settling within a week.

Why the other options are wrong:

- B, varicella zoster: causes chickenpox with widespread vesicles at different stages, not a palm-and-sole distribution.
- C, measles virus: causes Koplik spots and a maculopapular rash, not vesicles on the hands and feet.
- D, respiratory syncytial virus: causes bronchiolitis, not a vesicular rash.

Final Answer: Coxsackievirus A16 $\Rightarrow$ A

Answer: (A) Go Back to Q7

Q8.

Solution

Concept – erythema infectiosum (fifth disease): A slapped-cheek facial rash in a school-age child points to one specific virus.

Step 1 – name the organism: Erythema infectiosum is caused by **parvovirus B19**.

Step 2 – the sequence: It begins with the bright red slapped-cheek appearance, followed by a lacy reticular rash on the trunk and limbs; the child is usually no longer infectious once the rash appears.

Why the other options are wrong:

- A, rubella: causes a milder pink rash with post-auricular lymphadenopathy, not a slapped-cheek pattern.
- C, Streptococcus pyogenes: causes scarlet fever with a sandpaper rash and strawberry tongue.
- D, human herpesvirus 6: causes roseola infantum, with high fever then a rash as the fever falls.

Final Answer: Parvovirus B19 $\Rightarrow$ B

Answer: (B) Go Back to Q8

Q9.

Solution

Concept – chronic rheumatic heart disease: Rheumatic fever damages heart valves, and one valve lesion dominates the chronic picture.

Step 1 – match the murmur: A low-pitched rumbling mid-diastolic murmur at the apex is the hallmark of **mitral stenosis**, the commonest chronic valve lesion of rheumatic heart disease.

Step 2 – the mechanism: Repeated rheumatic inflammation thickens and fuses the mitral leaflets, narrowing the valve and obstructing flow from the left atrium to the left ventricle.

Why the other options are wrong:

- A, aortic regurgitation only: can occur in rheumatic disease but produces an

early diastolic murmur, not an apical rumble.
- B, pulmonary atresia: a congenital lesion, not a consequence of rheumatic fever.
- C, tricuspid regurgitation only: uncommon as an isolated rheumatic lesion and gives a different murmur.

Final Answer: Mitral stenosis $\Rightarrow$ D

Answer: (D) Go Back to Q9

Q10.

Solution

Concept – isolated pulmonary valve stenosis: Narrowing of the pulmonary valve obstructs right ventricular outflow and generates a characteristic murmur.

Step 1 – read the schematic: Blood is forced through the narrowed valve during systole, producing an **ejection systolic murmur** best heard at the upper left sternal border (the pulmonary area).

Step 2 – confirm the site: The murmur is a crescendo-decrescendo systolic murmur that radiates towards the left shoulder, often with a widely split second heart sound.

Why the other options are wrong:

- A, continuous machinery murmur: this is the signature of a patent ductus arteriosus.
- B, mid-diastolic rumble: this points to mitral stenosis, not pulmonary stenosis.
- C, pansystolic murmur at the apex: this suggests mitral regurgitation.

Final Answer: Ejection systolic murmur at the upper left sternal border $\Rightarrow$ D

Answer: (D) Go Back to Q10

Q11.

Solution

Concept – tricuspid atresia: Absence of the tricuspid valve gives a distinctive cyanotic lesion with a telltale electrocardiogram.

Step 1 – read the clues: Cyanosis from birth with striking **left-axis deviation** and a small or absent right ventricle is characteristic of **tricuspid atresia**.

Step 2 – the mechanism: With no flow from the right atrium to the right ventricle, blood must cross an atrial defect to the left side, so the underused right ventricle is hypoplastic and the axis shifts leftward.

Why the other options are wrong:

- A, atrial septal defect: an acyanotic left-to-right shunt, and does not give this left-axis single-ventricle picture.
- C, isolated ventricular septal defect: an acyanotic shunt, not a cyanotic lesion with left-axis deviation.
- D, patent ductus arteriosus: an acyanotic shunt with a continuous murmur.

Final Answer: Tricuspid atresia $\Rightarrow$ B

Answer: (B) Go Back to Q11

Q12.

Solution

Concept – neuroblastoma: A catecholamine-secreting abdominal tumour of early childhood arises from neural crest tissue.

Step 1 – read the clues: An irregular abdominal mass crossing the midline with raised urinary **VMA and catecholamines** points to **neuroblastoma**, which arises from the adrenal medulla or sympathetic chain.

Step 2 – confirm: The tumour cells secrete catecholamines whose breakdown products (VMA and HVA) are raised in the urine, a key diagnostic marker.

Why the other options are wrong:

- A, Wilms tumour: a renal tumour that is usually smooth and rarely crosses the midline, without raised VMA.
- C, hepatoblastoma: arises in the liver and raises alpha-fetoprotein, not urinary catecholamines.
- D, acute lymphoblastic leukaemia: presents with marrow failure and blasts, not a catecholamine-secreting mass.

Final Answer: Neuroblastoma $\Rightarrow$ B

Answer: (B) Go Back to Q12

Q13.

Solution

Concept – retinoblastoma: The commonest intraocular malignancy of childhood presents with a white pupillary reflex.

Step 1 – match the sign: A white reflex (**leukocoria**) replacing the normal red reflex, linked to mutation of the **RB1** tumour-suppressor gene, is the hallmark of **retinoblastoma**.

Step 2 – the urgency: Prompt referral is essential, as early treatment can save both vision and life; a squint may be the other early sign.

Why the other options are wrong:

- B, congenital cataract: can also cause leukocoria but is not driven by the RB1 gene and is non-malignant.
- C, vitamin A deficiency: causes night blindness and Bitot spots, not leukocoria.
- D, simple refractive error: causes blurred vision but no white reflex.

Final Answer: Retinoblastoma $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q13

Q14.

Solution

Concept – signs of raised intracranial pressure in a child: A dangerous rise in intracranial pressure triggers a recognisable set of physical signs.

Step 1 – recall the Cushing response: Raised intracranial pressure produces the Cushing triad of **rising blood pressure, a slow pulse (bradycardia)** and irregular breathing.

Step 2 – add the infant sign: In an infant whose fontanelle is still open, raised pressure also causes a **bulging anterior fontanelle**, together with vomiting and a falling conscious level.

Why the other options are wrong:

- A, low blood pressure with a sunken fontanelle: this describes dehydration or shock, the opposite pattern.
- B, normal conscious level with brisk pupils: this is reassuring and does not indicate raised pressure.

- D, warm peripheries with a rapid pulse: these are non-specific and not the Cushing pattern.

Final Answer: Rising blood pressure, slow pulse and a bulging fontanelle $\Rightarrow$ C

Answer: (C) Go Back to Q14

Q15.

Solution

Concept – management of paediatric drowning: Drowning injury is driven by hypoxia, so restoring oxygenation is the overriding priority.

Step 1 – set the priority: The most important immediate step is to **open the airway and start rescue breathing and CPR without delay**, following the airway-breathing-circulation sequence.

Step 2 – the rationale: Early effective ventilation reverses the hypoxia that causes brain injury; attention to temperature and other measures follows once oxygenation is being restored.

Why the other options are wrong:

- A, abdominal thrusts to expel water: these waste time and risk aspiration; routine water removal is not recommended.
- B, oral warm fluids: giving fluids to an unconscious child risks aspiration and delays resuscitation.
- D, waiting for spontaneous recovery: dangerous inaction that allows fatal hypoxia to continue.

Final Answer: Open the airway and start rescue breathing and CPR without delay $\Rightarrow$ C

Answer: (C) Go Back to Q15

Answer Key

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