INI CET Paediatrics

Sample Paper – 1

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. The APGAR score used to assess a newborn at 1 and 5 minutes is built from five clinical signs. Which of the following is **NOT** one of its five components?

(A) Heart rate

(B) Muscle tone

(C) Birth weight

(D) Reflex irritability (response to stimulation)

Q2. In a healthy term newborn, physiological jaundice characteristically:

(A) Appears after 24 hours of life and peaks around day 3 to 5

(B) Appears within the first 24 hours of life

(C) Appears only after the first week of life

(D) Never occurs in a term infant

Q3. Respiratory distress syndrome (hyaline membrane disease) in a preterm newborn is caused by deficiency of:

(A) Alpha-1 antitrypsin

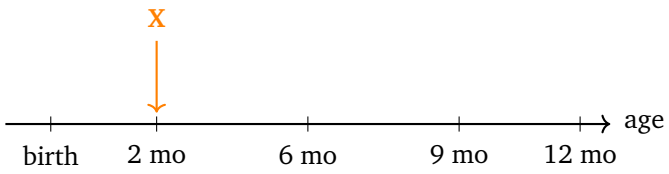
(B) Fetal haemoglobin

(C) Pulmonary surfactant

(D) Vitamin K

Growth, Development and Nutrition

Q4. On the developmental timeline below, the arrow **X** marks the age at which a normal infant first shows a *social smile* in response to a caregiver. That age is:



(A) About 6 to 8 weeks (around 2 months)

(B) About 6 months

(C) About 9 months

(D) About 12 months

Q5. A 2-year-old presents with bilateral pitting pedal oedema, a distended abdomen, sparse depigmented hair and a low serum albumin. This picture is the hallmark of:

(A) Marasmus

(B) Kwashiorkor

(C) Nutritional rickets

(D) Infantile scurvy

Q6. Bitot spots on the conjunctiva together with night blindness in a malnourished child indicate deficiency of:

(A) Vitamin C

(B) Vitamin D

(C) Vitamin B12

(D) Vitamin A

Immunisation and Infectious Disease

Q7. Under India's Universal Immunisation Programme (UIP), the BCG vaccine is scheduled to be given:

(A) At 6 weeks of age

(B) At birth, or as early as possible up to one year of age

(C) At 9 months of age

(D) At 5 years of age

Q8. Koplik spots, small bluish-white lesions on the buccal mucosa appearing before the rash, are pathognomonic of:

(A) Chickenpox

(B) Rubella

(C) Mumps

(D) Measles

Respiratory and Cardiovascular Paediatrics

Q9. The single most common causative organism of acute bronchiolitis in infants under 2 years is:

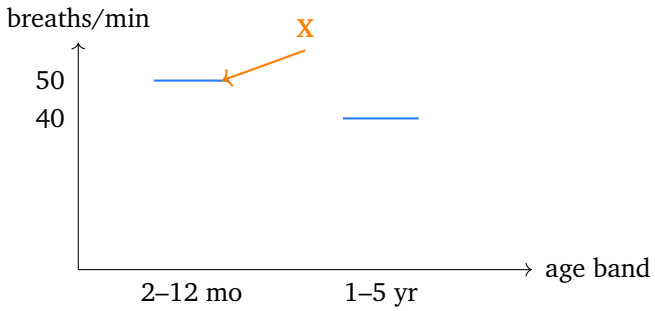
(A) Streptococcus pneumoniae

(B) Influenza virus

(C) Respiratory syncytial virus (RSV)

(D) Staphylococcus aureus

Q10. The chart below plots the WHO IMNCI cut-off for *fast breathing*. For an infant aged 2 to 12 months, the arrow **X** marks the threshold respiratory rate that counts as fast breathing, namely:



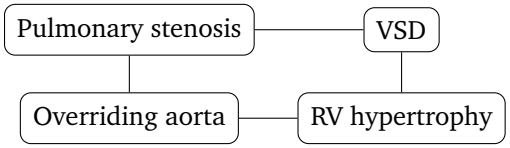
(A) 50 breaths per minute or more

(B) 30 breaths per minute or more

(C) 20 breaths per minute or more

(D) 70 breaths per minute or more

Q11. The schematic shows the four features that together define one congenital lesion: pulmonary stenosis, a ventricular septal defect, an overriding aorta and right ventricular hypertrophy. This most common cyanotic congenital heart disease of childhood is:



(A) Ventricular septal defect alone

(B) Patent ductus arteriosus

(C) Tetralogy of Fallot

(D) Atrial septal defect

Haematology, Genetics and Systemic Disease

Q12. A 2-year-old has severe microcytic hypochromic anaemia needing repeated transfusions, hepatosplenomegaly and a 'hair-on-end' appearance of the skull on X-ray. The most likely diagnosis is:

(A) Iron deficiency anaemia

(B) Sickle cell trait

(C) G6PD deficiency

(D) Beta-thalassaemia major

Q13. Trisomy 21 (Down syndrome) is most commonly associated with which congenital heart defect?

(A) Atrioventricular septal defect (endocardial cushion defect)

(B) Coarctation of the aorta

(C) Bicuspid aortic valve

(D) Ebstein anomaly

Emergency, Fluids and Electrolytes

Q14. The current WHO low-osmolarity oral rehydration solution (ORS) used to treat childhood dehydration has a total osmolarity of approximately:

(A) 311 mOsm/L

(B) 245 mOsm/L

(C) 90 mOsm/L

(D) 400 mOsm/L

Q15. During single-rescuer cardiopulmonary resuscitation of a child, the recommended chest compression to ventilation ratio is:

(A) 15 compressions to 2 breaths

(B) 30 compressions to 2 breaths

(C) 5 compressions to 1 breath

(D) 3 compressions to 1 breath

Detailed Solutions

Q1.

Solution

Concept – the five components of the APGAR score: The APGAR score is a rapid bedside assessment of a newborn's condition at 1 and 5 minutes.

Step 1 – list the five signs: The mnemonic APGAR stands for Appearance (colour), Pulse (heart rate), Grimace (reflex irritability), Activity (muscle tone) and Respiration.

Step 2 – spot the odd one out: Birth weight is recorded separately at delivery but is *not* scored in APGAR.

Why the other options are wrong:

- A, heart rate: this is the 'Pulse' component (0, less than 100, or 100 or more).
- B, muscle tone: this is the 'Activity' component.
- D, reflex irritability: this is the 'Grimace' component.

Final Answer: Birth weight is not part of APGAR $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q1

Q2.

Solution

Concept – physiological versus pathological neonatal jaundice: Timing of onset is the key to separating benign physiological jaundice from a dangerous pathological cause.

Step 1 – recall the rule: Physiological jaundice appears **after 24 hours** of life, peaks on day 3 to 5 in a term baby, and then fades.

Step 2 – the red flag: Any jaundice appearing *within* the first 24 hours is pathological until proven otherwise (for example haemolysis from Rh or ABO incompatibility).

Why the other options are wrong:

- B, within 24 hours: this defines pathological, not physiological, jaundice.
- C, only after the first week: this suggests prolonged or pathological jaundice.
- D, never in a term infant: physiological jaundice is in fact very common in term babies.

Final Answer: Appears after 24 hours, peaks day 3 to 5 ⇒ A

Answer: (A) Go Back to Q2

Q3.

Solution

Concept – pathogenesis of respiratory distress syndrome (RDS): RDS, or hyaline membrane disease, is the classic lung disease of prematurity.

Step 1 – identify the deficient substance: It is caused by deficiency of **pulmonary surfactant**, produced by type II pneumocytes, which normally lowers alveolar surface tension.

Step 2 – the consequence: Without surfactant the alveoli collapse at end-expiration, causing widespread atelectasis, hypoxia and grunting respiration.

Why the other options are wrong:

- A, alpha-1 antitrypsin: its deficiency causes emphysema and liver disease, not neonatal RDS.
- B, fetal haemoglobin: this is normally high in newborns and is unrelated to RDS.
- D, vitamin K: its deficiency causes haemorrhagic disease of the newborn, not RDS.

Final Answer: Pulmonary surfactant deficiency ⇒ C

Answer: (C) Go Back to Q3

Q4.

Solution

Concept – the earliest social milestone: Developmental milestones follow a predictable age sequence, and the social smile is one of the first.

Step 1 – read the timeline: The arrow **X** points to the 2-month mark on the age axis.

Step 2 – match the milestone: A responsive social smile normally appears by **6 to 8 weeks** (about 2 months) of age.

Why the other options are wrong:

- B, 6 months: by now the baby sits with support and transfers objects, well

past the social smile.
- C, 9 months: the age of crawling and stranger anxiety.
- D, 12 months: the age of first words and standing, far later than the social smile.

Final Answer: About 6 to 8 weeks $\Rightarrow$ A

Answer: (A) Go Back to Q4

Q5.

Solution

Concept – classifying protein-energy malnutrition: Severe malnutrition splits into two classic patterns, and oedema is the discriminator.

Step 1 – read the picture: Pitting oedema with a distended abdomen, sparse depigmented hair and hypoalbuminaemia is the hallmark of **kwashiorkor** (severe protein deficiency with relatively preserved calories).

Step 2 – contrast with marasmus: Marasmus is severe wasting from a total calorie deficit and, crucially, has *no* oedema.

Why the other options are wrong:

- A, marasmus: presents as gross wasting with an old-man face and no oedema.
- C, nutritional rickets: causes bony deformities from vitamin D deficiency, not oedema.
- D, infantile scurvy: causes bleeding gums and painful subperiosteal haemorrhages from vitamin C deficiency.

Final Answer: Kwashiorkor $\Rightarrow$ B

Answer: (B) Go Back to Q5

Q6.

Solution

Concept – ocular signs of vitamin deficiency: Certain eye findings point to a single specific micronutrient lack.

Step 1 – match the signs: Bitot spots (foamy keratinised patches on the conjunctiva) plus night blindness (nyctalopia) are classic features of **vitamin A** deficiency.

Step 2 – why: Vitamin A (retinal) is essential for rhodopsin in the rods, so its

lack impairs dim-light vision first, followed by conjunctival and corneal changes (xerophthalmia).

Why the other options are wrong:

- A, vitamin C: deficiency causes scurvy (bleeding gums), not Bitot spots.
- B, vitamin D: deficiency causes rickets, not night blindness.
- C, vitamin B12: deficiency causes megaloblastic anaemia and neuropathy.

Final Answer: Vitamin A deficiency $\Rightarrow$ D

Answer: (D) Go Back to Q6

Q7.

Solution

Concept – timing of BCG in the UIP schedule: The Universal Immunisation Programme fixes the age at which each vaccine is due.

Step 1 – recall BCG timing: BCG is given **at birth**, or as early as possible up to one year of age.

Step 2 – the rationale: Early BCG protects the infant against severe childhood tuberculosis, especially tuberculous meningitis and miliary TB.

Why the other options are wrong:

- A, 6 weeks: this is when the first dose of OPV, pentavalent, rotavirus and PCV are due, not BCG.
- C, 9 months: this is the timing of the first measles-rubella (MR) dose.
- D, 5 years: around this age the DPT booster is given, not BCG.

Final Answer: At birth (up to one year) $\Rightarrow$ B

Answer: (B) Go Back to Q7

Q8.

Solution

Concept – pathognomonic sign of measles: One mucosal sign appears before the rash and clinches the diagnosis.

Step 1 – name the disease: Koplik spots, small white lesions on an erythematous buccal mucosa, are pathognomonic of **measles** (rubeola) and appear 1 to 2 days before the skin rash.

Step 2 – the sequence: Measles then produces a maculopapular rash spreading cephalocaudally, along with the '3 Cs' of cough, coryza and conjunctivitis.

Why the other options are wrong:

- A, chickenpox: gives crops of vesicles at different stages, not Koplik spots.
- B, rubella: causes a milder rash with post-auricular lymphadenopathy.
- C, mumps: causes parotid swelling, not a buccal enanthem or rash.

Final Answer: Measles $\Rightarrow$ D

Answer: (D) Go Back to Q8

Q9.

Solution

Concept – aetiology of acute bronchiolitis: Bronchiolitis is the commonest lower respiratory infection of infancy.

Step 1 – name the organism: Respiratory syncytial virus (RSV) is by far the commonest cause, typically in winter epidemics in babies under 2 years.

Step 2 – the clinical picture: It causes wheeze, hyperinflation and fine crepitations from inflammation and plugging of the small airways (bronchioles).

Why the other options are wrong:

- A, Streptococcus pneumoniae: a leading cause of bacterial pneumonia, not bronchiolitis.
- B, influenza virus: can cause bronchiolitis occasionally but is far less common than RSV.
- D, Staphylococcus aureus: causes severe pneumonia with pneumatoceles, not typical bronchiolitis.

Final Answer: Respiratory syncytial virus $\Rightarrow$ C

Answer: (C) Go Back to Q9

Q10.

Solution

Concept – WHO IMNCI cut-offs for fast breathing: The threshold respiratory rate that defines pneumonia depends on the child's age.

Step 1 – read the chart: The arrow **X** sits at the 2-to-12-month band, whose cut-off line is drawn at 50 breaths per minute.

Step 2 – apply the value: For an infant aged 2 to 12 months, fast breathing is **50 breaths per minute or more**.

Why the other options are wrong:

- B, 30 or more: this is closer to a normal infant rate, not the cut-off.
- C, 20 or more: this is a normal adult rate, far too low for infants.
- D, 70 or more: too high; the 40-per-minute cut-off applies to the older 1-to-5-year band, and 50 to the infant band.

Final Answer: 50 breaths per minute or more $\Rightarrow$ A

Answer: (A) Go Back to Q10

Q11.

Solution

Concept – Tetralogy of Fallot (TOF): Four anatomical features together define the commonest cyanotic congenital heart disease of childhood.

Step 1 – match the four features: Pulmonary stenosis, a ventricular septal defect, an overriding aorta and right ventricular hypertrophy are the tetrad of **Tetralogy of Fallot**.

Step 2 – the clinical clue: Right-to-left shunting across the VSD causes cyanotic 'tet' spells and a boot-shaped heart on chest X-ray.

Why the other options are wrong:

- A, isolated VSD: the commonest congenital heart defect overall, but acyanotic (left-to-right shunt).
- B, patent ductus arteriosus: an acyanotic shunt with a continuous machinery murmur.
- D, atrial septal defect: an acyanotic shunt with fixed splitting of the second heart sound.

Final Answer: Tetralogy of Fallot $\Rightarrow$ C

Answer: (C) Go Back to Q11

Q12.

Solution

Concept – beta-thalassaemia major: A transfusion-dependent microcytic anaemia from infancy points to a haemoglobinopathy.

Step 1 – read the clues: Severe microcytic hypochromic anaemia needing repeated transfusions, hepatosplenomegaly and a 'hair-on-end' skull X-ray are classic for **beta-thalassaemia major**.

Step 2 – the mechanism: Absent beta-globin chains cause ineffective erythropoiesis; marrow expansion produces the hair-on-end skull and frontal bossing, and haemolysis causes the organomegaly.

Why the other options are wrong:

- A, iron deficiency: microcytic but responds to iron and does not need transfusions or cause a hair-on-end skull.
- B, sickle cell trait: a benign carrier state that is usually asymptomatic.
- C, G6PD deficiency: causes episodic haemolysis after oxidant stress, not chronic transfusion dependence.

Final Answer: Beta-thalassaemia major $\Rightarrow$ D

Answer: (D) Go Back to Q12

Q13.

Solution

Concept – cardiac defects in Down syndrome: Trisomy 21 has a strong link to one particular congenital heart lesion.

Step 1 – name the defect: The commonest heart defect in Down syndrome is the **atrioventricular septal defect** (endocardial cushion defect / AV canal).

Step 2 – why it matters: Because of this strong association, every newborn with Down syndrome needs an echocardiogram to screen for it.

Why the other options are wrong:

- B, coarctation of the aorta: more typical of Turner syndrome.
- C, bicuspid aortic valve: also associated with Turner syndrome, not Down.
- D, Ebstein anomaly: linked to maternal lithium use, not trisomy 21.

Final Answer: Atrioventricular septal defect $\Rightarrow$ A

Answer: (A) Go Back to Q13

Q14.

Solution

Concept – WHO low-osmolarity ORS: The reduced-osmolarity formula replaced the older higher-osmolarity ORS.

Step 1 – recall the value: The current WHO low-osmolarity ORS has a total osmolarity of about **245 mOsm/L** (sodium 75, glucose 75 mmol/L).

Step 2 – the advantage: The lower osmolarity reduces stool output, vomiting and the need for unscheduled intravenous fluids compared with the old 311 mOsm/L solution.

Why the other options are wrong:

- A, 311 mOsm/L: this was the older, higher-osmolarity ORS, now replaced.
- C, 90 mOsm/L: this is the sodium-plus-glucose figure region, not the total osmolarity.
- D, 400 mOsm/L: hyperosmolar and never recommended, as it would worsen diarrhoea.

Final Answer: About 245 mOsm/L $\Rightarrow$ B

Answer: (B) Go Back to Q14

Q15.

Solution

Concept – paediatric CPR compression to ventilation ratio: The ratio depends on how many rescuers are present.

Step 1 – recall the single-rescuer ratio: For a lone rescuer performing CPR on a child, the ratio is **30 compressions to 2 breaths**, the same as for adults.

Step 2 – contrast: With two rescuers the paediatric ratio changes to 15:2, and 3:1 is used only in neonatal resuscitation.

Why the other options are wrong:

- A, 15:2: this is the *two-rescuer* paediatric ratio.
- C, 5:1: an outdated ratio no longer recommended.

- D, 3:1: this is the neonatal resuscitation ratio, not for a child.

Final Answer: 30 compressions to 2 breaths $\Rightarrow$ B

Answer: (B) Go Back to Q15

Answer Key

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