

Sample Written Exam – Pediatric Emergency Medicine

Question 1

An 8-year-old previously healthy child presents with herpes zoster.

- a. In an immunocompetent patient, list **FOUR** common neurologic complications associated with this condition

MODEL ANSWER (0.5 marks each, total 2 marks)

- aseptic meningitis
- encephalitis
- post-herpetic neuralgia
- cranial nerve neuropathy/peripheral facial nerve weakness and deafness (as part of the Ramsay Hunt syndrome)
- Reye syndrome
- Cerebellitis

- b. In an immunocompetent patient, list **FOUR** common ophthalmologic complications associated with this condition

MODEL ANSWER (0.5 marks each, total 2 marks)

- conjunctivitis
- keratitis
- corneal ulceration
- iridocyclitis/iritis/uveitis
- glaucoma
- visual impairment/blindness

Question 2

In a study of 500 children aged 3 to 24 months with fever, there were 50 with positive urine cultures (catheter sample). The urinalysis on the same sample had a positive leukocyte esterase in 35 patients, and in the 450 children with negative cultures, 90 had positive leukocyte esterase.

- a. Give the ratios for the sensitivity and specificity of leukocyte esterase as a diagnostic test.

MODEL ANSWER (1 mark each, total 2 marks)

- Sensitivity = $35/35+15$ or $35/50$ or $7/10$ or 0.7
- Specificity = $360/360+90$ or $360/450$ or $4/5$ or 0.8

- b. What is the negative predictive value of leukocyte esterase in this study? (Fraction is acceptable.)

MODEL ANSWER (1 mark)

- Negative predictive value = $360/375 = 0.96$



Question 3

List **FOUR** common/important possible acute complications of splinting a musculoskeletal injury with plaster or fiberglass.

MODEL ANSWER (0.5 marks each, total 2 marks)

- Neurovascular compromise (nerve injury/paresthesia/increased swelling/ischemia/compartment syndrome)
- Pressure sores/skin breakdown/cellulitis
- Burn
- Contact dermatitis
- Maceration of skin between digits

Question 4

Name **FOUR** interventions or medical therapies that can be used to treat a "tet spell" (cyanotic spell in tetralogy of Fallot).

MODEL ANSWER (any four of the following, 0.5 each, total 2 marks)

- oxygen
- knee chest position/squat
- Valsalva
- (Intranasal) fentanyl
- morphine
- propranolol or beta-blocker
- phenylephrine or alpha-agonist
- sodium bicarbonate
- relaxation (calm environment)
- methoxamine
- ketamine
- fluid bolus
- packed Red Blood Cell transfusion

Question 5

In critically ill children with sepsis/meningitis, LIST the most appropriate combination of antibiotics for EACH of the following three pediatric age groups.

- a. 0 - 28 days

MODEL ANSWER (0.5 marks each, total 1 mark)

- Ampicillin and Gentamicin OR Ampicillin/Cefotaxime



b. 29 days - 3 months

MODEL ANSWER (0.5 marks each, total 1 mark)

- Ampicillin and 3rd generation cephalosporin

c. >3 months

MODEL ANSWER (0.5 marks each, total 1 mark)

- 3rd generation cephalosporin and Vancomycin

Question 6

A 5-day-old term female neonate has a 36-hour history of poor feeding, lethargy, and vomiting. Her vital signs are temperature 36.3°C, respiratory rate 70/min, heart rate 165 bpm, blood pressure 70/40 mm Hg, and oxygen saturation of 96% on room air. She is lethargic and floppy. Full septic work-up was done, a bolus has been given, and IV antibiotics are running. You receive an urgent call from the laboratory that the neonate's ammonia level is 750 $\mu\text{mol/L}$ (normal is less than 80 $\mu\text{mol/L}$).

Capillary blood gas shows pH of 7.48, PaCO_2 33 mm Hg, and HCO_3 22 mmol/L, and glucose is 4.8 mmol/L. A second non-tourniquet ammonia level has been sent.

List **FOUR** critical steps specific to managing this neonate with hyperammonemia, apart from ABCs and consulting NICU, PICU, and metabolics.

MODEL ANSWER (1 mark each, total 4 marks)

(Must include stop feeds, IV 10% dextrose for full marks, max 2 marks without)

- Stop feeds
- IV 10% Dextrose (DO NOT ACCEPT D5 or just Dextrose)
- IV Insulin
- IV Intralipid™
- Start cocktail of sodium benzoate/ sodium phenylacetate (accept Ammunol®)
- Start arginine
- Prepare for CRRT/ dialysis