

**B.Sc., PHYSICIAN ASSISTANT**

**PHYSIOLOGY PUZZLE**

**UNIT - 1**

**TOPIC - NEUROMUSCULAR JUNCTION**

**TOTAL MARKS - 10 MARKS**

**CASE-BASED PUZZLE - "Synaptic Standoff"**

A 32-year-old construction worker suddenly experiences muscle weakness, drooping eyelids, and difficulty swallowing after a picnic. Symptoms worsen with activity but improve with rest. Lab tests show normal electrolytes but reduced end-plate potentials. Analyze the case to identify the NMJ disruption and resolution strategy.

**Tasks:**

- Task 1: Identify the primary NMJ component affected
- Task 2: Deduce the likely toxin or cause from the scenario and symptoms.
- Task 3: Propose a physiological antidote or mechanism to counteract it.

**Clues:**

- Clue 1: Symptoms mimic a blockade at the postsynaptic membrane, common after consuming undercooked poultry.
- Clue 2: The issue stems from inhibited vesicle fusion, not calcium influx, leading to flaccid paralysis.
- Clue 3: Repeated nerve stimulation shows decremental response, unlike tetanic facilitation.

**B.Sc., PHYSICIAN ASSISTANT**

**PHYSIOLOGY PUZZLE**

- Clue 4: Treatment enhances ACh availability by inhibiting its breakdown enzyme.

**RUBRICS:**

<b>Criterion</b>	<b>Marks (out of 10)</b>
Identification of Component	3
Deduction of Cause	3
Counteraction Strategy	2
Coherence & Detail	2
<b>Total Marks</b>	<b>10 marks</b>