OXYGENATION QUESTION REVIEW PACK
Draft for Approval

Structural summary (from provided TMC PDF)
- Stem style: concise vignette + clear action word (FIRST/NEXT/best).
- Data style: focused values (ABG, FiO2/device, SpO2, vital signs, vent settings).
- Distractors: plausible but incomplete, delayed, or unsafe choices.
- Wording patterns: priority language and context qualifiers.
- Traps: confusing oxygenation vs ventilation, wrong priority, misreading device limits.

Q1 (Easy)
A 49-year-old with community-acquired pneumonia is on nasal cannula 4 L/min. He is alert but dyspneic.
Data: RR 30/min, HR 112/min, SpO2 84%, ABG: pH 7.47, PaCO2 32 mm Hg, PaO2 50 mm Hg, HCO3- 23 mEq/L.
What is the best immediate oxygenation step?
A. Give 2.5 mg albuterol by nebulizer
B. Switch to a nonrebreather mask at 15 L/min
C. Decrease oxygen to avoid oxygen toxicity
D. Sedate the patient for tachypnea
Correct: B
Rationale: Severe hypoxemia with preserved ventilation requires immediate FiO2 escalation.
Why others are wrong: A not primary problem; C worsens hypoxemia; D can depress drive.
Keyword decoding: "best immediate" = stabilize oxygenation first.

Q2 (Easy)
A 34-year-old is rescued from an enclosed garage fire. He is awake with headache and nausea.
SpO2 is 99% on pulse oximetry while breathing oxygen by mask. ABG PaO2 is 180 mm Hg.
Which test best evaluates true hemoglobin oxygenation status?
A. Standard pulse oximetry trend
B. End-tidal CO2
C. CO-oximetry
D. Chest radiograph
Correct: C
Rationale: CO-oximetry measures oxyhemoglobin and dyshemoglobins directly.
Why others are wrong: A can be falsely normal in CO exposure; B ventilation only; D not hemoglobin status.
Keyword decoding: "true hemoglobin oxygenation" = direct species measurement.

Q3 (Easy)
A postoperative patient is receiving 40% air-entrainment mask oxygen. He remains tachypneic with SpO2 85%.
ABG: pH 7.44, PaCO2 35 mm Hg, PaO2 52 mm Hg.
Which change is most appropriate now?
A. Change to nonrebreather mask at 15 L/min
B. Start incentive spirometry only
C. Reduce FiO2 to prevent absorption atelectasis
D. Administer IV bicarbonate
Correct: A
Rationale: Persistent significant hypoxemia needs immediate higher FiO2 delivery.
Why others are wrong: B insufficient now; C worsens oxygenation; D no metabolic indication.
Keyword decoding: "most appropriate now" = immediate oxygenation action.

Q4 (Medium)
A 67-year-old with severe COPD is seen in clinic. On room air:
pH 7.38, PaCO2 56 mm Hg, PaO2 48 mm Hg, HCO3- 32 mEq/L, SpO2 81%.
He is stable and speaking in full sentences. Most appropriate next step?
A. Initiate supplemental oxygen therapy
B. Withhold oxygen to avoid suppressing hypoxic drive
C. Order bronchoscopy before treatment
D. Begin immediate intubation
Correct: A
Rationale: Chronic hypercapnia with marked hypoxemia requires titrated oxygen.
Why others are wrong: B unsafe myth; C delays treatment; D not indicated by curr ent status.
Keyword decoding: "next step" = treat current physiologic deficit first.

Q5 (Medium)
An intubated patient with bilateral infiltrates is on VC:
FiO2 0.80, VT 6 mL/kg PBW, rate 20/min, PEEP 8 cm H2O.
ABG: pH 7.40, PaCO2 41 mm Hg, PaO2 55 mm Hg.
Which ventilator change best targets the problem?
A. Increase respiratory rate to 28/min
B. Increase PEEP
C. Decrease inspiratory time
D. Decrease FiO2 to 0.60
Correct: B
Rationale: CO2 is adequate; oxygenation is failing. PEEP improves recruitment.
Why others are wrong: A mostly ventilation; C not primary fix; D worsens hypoxem ia.
Keyword decoding: "best targets" = match change to oxygenation failure.

Q6 (Medium)
A patient receiving dapsone becomes cyanotic. On 100% oxygen, pulse oximetry rem ains 85%.
ABG: pH 7.41, PaCO2 38 mm Hg, PaO2 310 mm Hg.
Which test should be obtained?
A. Repeat pulse oximetry on a different finger
B. CO-oximetry
C. End-tidal CO2 monitoring
D. Bedside spirometry
Correct: B
Rationale: High PaO2 with low SpO2 suggests dyshemoglobinemia.
Why others are wrong: A does not diagnose; C ventilation only; D not relevant.
Keyword decoding: "clarify abnormality" = resolve PaO2/SpO2 mismatch.

Q7 (Medium)
Immediately after right subclavian line placement, a ventilated patient develops sudden hypoxemia and hypotension.
Peak inspiratory pressure rises from 24 to 45 cm H2O. Breath sounds are markedly reduced on the right.
What should be done first?
A. Increase FiO2 from 0.50 to 1.0 and wait
B. Needle decompression of the right chest
C. Give a bronchodilator treatment
D. Order routine morning chest x-ray
Correct: B
Rationale: Pattern strongly suggests tension pneumothorax; immediate decompressi on is lifesaving.
Why others are wrong: A temporary only; C wrong process; D delays urgent treatme nt.
Keyword decoding: "first" = immediate lifesaving intervention.

Q8 (Hard)
A patient with severe ARDS is on lung-protective ventilation:

FiO2 0.90, PEEP 14 cm H2O, VT 6 mL/kg PBW.
ABG: pH 7.36, PaCO2 44 mm Hg, PaO2 58 mm Hg.
Which intervention has strongest evidence to improve oxygenation in this severit y range?
A. Increase VT to 10 mL/kg PBW
B. Prone positioning
C. Decrease PEEP to reduce barotrauma risk
D. Discontinue sedation immediately
Correct: B
Rationale: Very low P/F ratio indicates severe ARDS; proning improves oxygenatio n and outcomes.
Why others are wrong: A increases VILI risk; C may worsen recruitment; D not dir ect oxygenation therapy.
Keyword decoding: "strongest evidence" = best-supported severe ARDS intervention .

Q9 (Hard)
A patient with dense lobar consolidation has PaO2 54 mm Hg on FiO2 0.60, then Pa O2 58 mm Hg on FiO2 1.00.
PaCO2 remains 39 mm Hg.
Which mechanism best explains persistent hypoxemia?
A. Intrapulmonary shunt
B. Pure hypoventilation
C. Increased dead space only
D. Mild diffusion limitation only
Correct: A
Rationale: Minimal PaO2 rise despite large FiO2 increase is classic shunt physio logy.
Why others are wrong: B usually raises CO2 and improves with FiO2; C is mainly C O2 issue; D usually responds to FiO2.
Keyword decoding: "best explains" = infer physiology from oxygen response patter n.

Q10 (Hard)
A trauma patient is on FiO2 0.60 with ABG: pH 7.32, PaCO2 34 mm Hg, PaO2 190 mm Hg, SaO2 99%.
Hemoglobin is 5.8 g/dL, lactate 5.2 mmol/L, skin cool/mottled.
Which intervention most directly improves tissue oxygen delivery now?
A. Increase FiO2 to 1.00
B. Increase PEEP by 5 cm H2O
C. Transfuse packed red blood cells
D. Decrease ventilator rate
Correct: C
Rationale: Oxygen content is critically limited by severe anemia despite high Pa O2/SaO2.
Why others are wrong: A small dissolved O2 effect; B not oxygenation problem; D does not fix O2 carrying capacity.
Keyword decoding: "tissue oxygen delivery" = prioritize hemoglobin and perfusion , not saturation alone.

QA status: All 10 items reviewed for single-best-answer clarity and physiology c onsistency.