THE STETHOSCOPE • IMAT Made Simple

FREE IMAT STARTER PACK

20 reviewed original questions • explanations • traps • shortcuts

20 Questions	**+1.5** Correct	**−0.4** Wrong
0 Blank	**5** Options	**2026** Syllabus-mapped

Built for exam preparation, not random practice.

Every question in this pack was reviewed against the current IMAT syllabus and edited to stay at appropriate IMAT-preparation level.

Original IMAT-style practice • Not an official IMAT paper

Balanced diagnostic
2 Reading & GK • 2 Logic • 7 Biology • 5 Chemistry • 4 Physics & Mathematics

The study loop
READ → LOCK → REVEAL → LEARN

After the score
Review wrong + blank answers, then choose the next topic from your weak-area list.

Use it twice
Take it once now, then retake missed concepts after revision.

Clear concepts • Practice questions • Detailed explanations • Smart strategies

HOW TO USE THIS PACK

Use it as a short diagnostic, not as a reading exercise.

1

Answer first
Do the 20 questions without looking at the explanations.

2

Score honestly
Correct +1.5 • wrong −0.4 • blank 0.

3

Review the reason
Study why the correct option works and why the distractor was attractive.

4

Choose what to revise
Use the weak-topic tracker at the end to decide your next lesson or practice set.

Content note: These are original IMAT-style questions. They are not official past-paper questions. The pack is designed around the current syllabus and current CINECA-era exam style.

01 Reading & General Knowledge

A city introduced dedicated bus lanes. Six months later, average bus journey times had fallen by 18%, car traffic on nearby parallel roads had fallen by 7%, and measured air pollution had fallen by 5%. Researchers noted that the same period also had an unusually mild winter, which can reduce pollution from heating. Which conclusion is best supported by the information?

A. The bus lanes definitely caused the entire fall in air pollution.

B. The bus lanes were associated with faster bus journeys and lower nearby car traffic, but the pollution change cannot be attributed entirely to them.

C. The mild winter caused the reduction in bus journey times.

D. The bus lanes had no effect because another factor also changed.

E. The fall in car traffic proves that total travel demand in the city decreased.

02 Reading & General Knowledge

Which scientist is best known for formulating the three laws of planetary motion from astronomical observations?

A. Isaac Newton

B. Galileo Galilei

C. Johannes Kepler

D. Nicolaus Copernicus

E. Michael Faraday

03 Logic & Problem Solving

A scholarship is awarded only to applicants who both score at least 80 on the written test and pass the interview. Lina received the scholarship. Which statement must be true?

A. Lina scored exactly 80.

B. Lina passed the interview but may have scored below 80.

C. Lina scored at least 80 and passed the interview.

D. Everyone who scores at least 80 receives the scholarship.

E. Passing the interview is sufficient by itself to receive the scholarship.

04 Logic & Problem Solving

A shop reduces the price of an item by 10% and then reduces the new price by a further 20%. What single percentage discount gives the same final price?

A. 18%

B. 20%

C. 28%

D. 30%

E. 32%

05 Biology

A patient has a lysosomal storage disorder caused by failure to degrade a specific macromolecule. Which cellular change is most likely?

A. Loss of ribosomes from the rough ER

B. Enlarged lysosomes containing undegraded material

C. Complete disappearance of the Golgi apparatus

D. Increased DNA replication in mitochondria

E. Failure of microtubule polymerization

06 Biology

Which factor contributes most directly to the resting membrane potential of a typical neuron?

A. Equal permeability to all ions

B. High membrane permeability to K^+ together with the K^+ concentration gradient

C. Continuous opening of voltage-gated Na^+ channels

D. Active transport of Na^+ into the cell

E. A higher extracellular concentration of large intracellular proteins

07 Biology

A PCR reaction does not continue doubling its product perfectly after many cycles. What is the best explanation?

A. DNA polymerase begins converting DNA into RNA.

B. Primers become longer during each cycle.

C. Reagents become limiting and amplification efficiency falls in later cycles.

D. DNA replication can occur only once in vitro.

E. The template DNA is destroyed after the first cycle.

08 Biology

A diploid cell has 2n = 4. During anaphase of mitosis, how many chromosomes are present in that single cell when sister chromatids have separated?

A. 2

B. 4

C. 6

D. 8

E. 16

09 Biology

A protein is synthesized on the rough endoplasmic reticulum and is destined for secretion from the cell. Which organelle most directly modifies, sorts and packages it before secretion?

A. Golgi apparatus

B. Lysosome

C. Centriole

D. Nucleolus

E. Peroxisome

10 Biology

An increase in antidiuretic hormone (ADH) has which direct effect on the kidneys?

A. Decreases water reabsorption in the collecting ducts

B. Increases water reabsorption in the collecting ducts

C. Stops filtration at the glomerulus

D. Increases glucose secretion into urine

E. Prevents sodium from entering the blood

11 Biology

During temporal summation in skeletal muscle, why can a second stimulus produce greater tension when it arrives soon after the first?

A. ATP is no longer required for contraction.

B. Cytosolic Ca2+ remains elevated between stimuli, allowing more cross-bridge cycling.

C. The sarcomere doubles in length after the first stimulus.

D. Acetylcholine permanently opens the ryanodine receptor.

E. Myosin is converted into actin between stimuli.

12 Chemistry

An acid of unknown concentration is titrated with NaOH of known concentration. The student overshoots the endpoint and records a NaOH volume that is too large. What happens to the calculated acid concentration?

A. It is too low.

B. It is too high.

C. It is unchanged.

D. It becomes exactly zero.

E. The direction of error cannot be predicted.

13 Chemistry

A sealed rigid container holds O2 at constant temperature. Helium is added to the container without changing its volume or temperature. What happens to the partial pressure of O2?

A. It increases because total pressure increases.

B. It decreases because O2 is diluted.

C. It remains unchanged.

D. It becomes equal to the helium partial pressure.

E. It falls to zero.

14 Chemistry

Which ion has the smallest radius in the isoelectronic series N^{3-}, O^{2-}, F^{-}, Na^{+}, Mg^{2+}?

A. N^{3-}

B. O^{2-}

C. F^{-}

D. Na^{+}

E. Mg^{2+}

15 Chemistry

A student uses 25 instead of 298 for the temperature in n = PV/RT. If all other values are correct, how is the calculated number of moles affected?

A. Too small

B. Too large

C. Unchanged

D. Exactly zero

E. It depends only on the pressure

16 Chemistry

The complete combustion of butane is: $2C_4H_{10} + xO_2 \rightarrow 8CO_2 + 10H_2O$. What is x?

A. 9

B. 10

C. 11

D. 12

E. 13

17 Physics & Mathematics

In an ideal hydraulic lift, the large piston produces 10 times the force of the small piston. Compared with the small piston, the large piston moves:

A. 10 times farther

B. The same distance

C. 1/10 the distance

D. 100 times farther

E. In the opposite direction

18 Physics & Mathematics

A roller-coaster car starts from rest at height h and moves without friction. At height h/2, which statement is correct?

A. Its kinetic energy is zero.

B. Its kinetic energy equals its remaining gravitational potential energy.

C. Its kinetic energy is twice its initial potential energy.

D. Its gravitational potential energy is zero.

E. Mechanical energy has decreased by half.

19 Physics & Mathematics

A manometer measures a fixed pressure difference. If the manometer liquid is replaced by a denser liquid, the required height difference Δh will be:

A. Larger

B. Smaller

C. The same

D. Zero for every pressure difference

E. Negative

20 Physics & Mathematics

If $x^2 - 5x + 6 = 0$, which pair gives the two possible values of x?

A. 1 and 6

B. 2 and 3

C. −2 and −3

D. 3 and 5

E. −1 and −6

ANSWER SHEET + IMAT SCORE

Record your choices before checking the explanations.

Q01 ____	**Q02** ____	**Q03** ____	**Q04** ____
Q05 ____	**Q06** ____	**Q07** ____	**Q08** ____
Q09 ____	**Q10** ____	**Q11** ____	**Q12** ____
Q13 ____	**Q14** ____	**Q15** ____	**Q16** ____
Q17 ____	**Q18** ____	**Q19** ____	**Q20** ____

SCORE = 1.5 × correct − 0.4 × wrong

Maximum for this 20-question pack: 30 points

ANSWERS & EXPLANATIONS

Q01 B — Do not overclaim causation

The data support an association between the bus-lane introduction, faster bus journeys, and lower traffic on nearby roads. Because a mild winter could also reduce pollution, the 5% pollution fall cannot be attributed entirely to the bus lanes.

TRAP	SHORTCUT
Treating correlation after an intervention as proof that the intervention caused every observed change.	Choose the option that says exactly what the evidence supports - no more.

Q02 C — Kepler and planetary motion

Johannes Kepler formulated three mathematical laws describing planetary orbits, using high-quality observations collected by Tycho Brahe. Newton later explained those laws using universal gravitation.

TRAP	SHORTCUT
Choosing Newton because he is associated with gravity and planetary motion.	Separate “described the motion” (Kepler) from “explained the force” (Newton).

Q03 C — Only if = necessary condition

“Awarded only to applicants who score at least 80 and pass the interview” means both requirements are necessary. If Lina received the scholarship, she must satisfy both.

TRAP	SHORTCUT
Reversing the implication and assuming everyone who meets the requirements must receive the scholarship.	Translate “A only if B” as A -> B.

ANSWERS & EXPLANATIONS

Q04 C — Successive percentage changes multiply

After a 10% reduction, 90% of the original price remains. Reducing that by 20% leaves 80% of 90%: 0.90 × 0.80 = 0.72. The final price is 72% of the original, so the overall discount is 28%.

TRAP
Adding 10% and 20% to get 30% instead of applying the second reduction to the already-reduced price.

SHORTCUT
Successive discounts: multiply the remaining fractions, then subtract from 1.

Q05 B — Undegraded substrate accumulates in lysosomes

Lysosomal storage disorders usually involve missing or defective lysosomal enzymes. The substrate that should be degraded accumulates, so lysosomes become enlarged and filled with undegraded material.

TRAP
Jumping to unrelated organelles simply because the disease affects intracellular processing.

SHORTCUT
Match the defective organelle to the material that would accumulate there.

Q06 B — Resting potential is dominated by K+ permeability

At rest, many neurons are much more permeable to K+ than to Na+. K+ tends to diffuse out down its concentration gradient, leaving the inside relatively negative. The Na+/K+ pump maintains the gradients but is not the immediate main cause of the voltage.

TRAP
Choosing the Na+/K+ pump alone as the direct cause of the resting potential.

SHORTCUT
Think: gradient + selective permeability.

ANSWERS & EXPLANATIONS

Q07 C — PCR enters a plateau phase

PCR is close to exponential only while primers, nucleotides, polymerase activity, and template access remain favorable. In later cycles, reagents become limiting and product reannealing increases, so efficiency falls.

TRAP	SHORTCUT
Assuming PCR must keep doubling perfectly because early-cycle amplification is exponential.	Early cycles ≈ exponential; late cycles = plateau.

Q08 D — Separated chromatids count as chromosomes

Before anaphase, a 2n=4 cell has 4 duplicated chromosomes. Once sister chromatids separate at anaphase, each chromatid is considered an individual chromosome, so there are 8 chromosomes in the single cell until cytokinesis separates the daughter cells.

TRAP	SHORTCUT
Counting centromere pairs as though chromatids were still joined.	Chromosome number follows centromere count.

Q09 A — The Golgi modifies and sorts secretory proteins

Proteins entering the rough ER are transported to the Golgi apparatus, where they are modified, sorted and packaged into vesicles for their final destinations, including secretion.

TRAP	SHORTCUT
Choosing the rough ER because protein synthesis begins there; the question asks where sorting and packaging occur afterwards.	Rough ER makes; Golgi modifies, sorts and ships.

ANSWERS & EXPLANATIONS

Q10 B — ADH conserves water

ADH increases the water permeability of collecting-duct cells, allowing more water to be reabsorbed into the blood. Urine volume falls and the urine becomes more concentrated.

TRAP
Confusing ADH with a hormone that directly controls glucose or stops filtration.

SHORTCUT
ADH = anti-diuresis = less water lost in urine.

Q11 B — Residual Ca^{2+} allows more force

If the second stimulus arrives before Ca^{2+} has been fully pumped back into the sarcoplasmic reticulum, cytosolic Ca^{2+} remains elevated. More troponin binding sites stay activated, allowing more cross-bridge cycling and greater tension.

TRAP
Attributing summation to ATP accumulation or permanent receptor opening.

SHORTCUT
Temporal summation = incomplete Ca^{2+} clearance.

Q12 B — Overshooting makes the calculated acid concentration too high

At the endpoint, the moles of NaOH used are related stoichiometrically to the acid. If the recorded NaOH volume is too large, you calculate too many moles of base and therefore too many moles - and too high a concentration - of acid.

TRAP
Reasoning that “more base added” means the acid must have been more dilute.

SHORTCUT
Write n = cV first; if V_base is too high, calculated n_acid is too high.

ANSWERS & EXPLANATIONS

Q13 C — Partial pressure depends on that gas only

For an ideal gas mixture, $p_{O2} = n_{O2}RT/V$. Adding helium changes the total pressure, but n_{O2}, T, and V are unchanged, so the O_2 partial pressure stays the same.

TRAP
Assuming “dilution” automatically lowers partial pressure even when volume is fixed.

SHORTCUT
Use $p_i = n_iRT/V$.

Q14 E — Highest nuclear charge gives the smallest isoelectronic ion

All five ions have 10 electrons. In an isoelectronic series, radius decreases as nuclear charge increases. Mg^{2+} has the largest proton number, so it pulls the same electron cloud most strongly and has the smallest radius.

TRAP
Using ionic charge alone without recognizing that the species are isoelectronic.

SHORTCUT
Same electrons -> compare proton number.

Q15 B — Using Celsius makes n too large

From $n = PV/RT$, temperature is in the denominator. Using 25 instead of 298 makes the denominator far too small, so the calculated number of moles becomes far too large.

TRAP
Thinking 25°C is “close enough” to 298 K because both represent the same physical temperature.

SHORTCUT
Gas-law temperature must be Kelvin.

ANSWERS & EXPLANATIONS

Q16 E — Balance oxygen last

Products contain 8CO2 = 16 O atoms and 10H2O = 10 O atoms, for 26 O atoms total. That requires 13 O2 molecules, so x = 13.

TRAP	SHORTCUT
Forgetting that O2 contributes two oxygen atoms per molecule.	Balance C, then H, then O.

Q17 C — Hydraulic force gain costs distance

For an ideal hydraulic system, pressure is transmitted equally, so a 10x force gain corresponds to a 10x area ratio. Conservation of displaced volume gives A_small d_small = A_large d_large, so the large piston moves 1/10 as far.

TRAP	SHORTCUT
Assuming force multiplication also multiplies distance.	Ideal machines trade force for distance.

Q18 B — Mechanical energy is conserved

Initially the energy is mgh. At height h/2, PE = mg(h/2) = 1/2 mgh, so the remaining half is kinetic energy. Thus KE = PE at that point.

TRAP	SHORTCUT
Assuming being above the ground means kinetic energy must be zero.	At h/2 from rest: half PE, half KE.

ANSWERS & EXPLANATIONS

Q19 B — Denser fluid needs less height

A manometer obeys $\Delta P = \rho g \Delta h$. For the same ΔP, if ρ increases, Δh must decrease.

TRAP
Thinking a denser liquid must “weigh more” and therefore rise higher.

SHORTCUT
For fixed ΔP: $\Delta h \propto 1/\rho$.

Q20 B — Factor the quadratic

$x^2 - 5x + 6$ factors as $(x-2)(x-3)$. Therefore $x = 2$ or $x = 3$.

TRAP
Choosing numbers that multiply to 6 but do not add to -5 in the factorization.

SHORTCUT
For $x^2 + bx + c$, look for two numbers that multiply to c and add to b.

7-DAY REVISION RESET

Day 1	Take the pack under light time pressure. Mark every uncertain answer.
Day 2	Review only wrong and blank questions. Write the concept behind each miss.
Day 3	Revise your weakest science topic, then do 10 focused questions.
Day 4	Revise Logic / Reading technique. Practise deduction and evidence-based inference.
Day 5	Do a mixed set. Use the real scoring rule and leave genuinely blind guesses blank.
Day 6	Redo the questions you missed earlier without looking at notes.
Day 7	Summarise your three weakest topics and choose next week's practice plan.

WEAK-TOPIC TRACKER

Topic	What went wrong?	Next action	Retest

CONTINUE WITH THE CHANNEL

Biology past questions — complete explanations
https://youtu.be/HaFOmGlhsnw

IMAT Mathematics practice questions
https://youtu.be/2iRp0t0IPFw

Medicine starts with better preparation.