

# IMAT

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International Medical Admissions Test②

FOR DEGREE COURSE IN INTERNATIONAL  
MEDICINE&SURGERY

The total number of questions is 60 and the duration is 100 minutes.

The scoring will be grades out of 90 Points.

The correct answers will be multiplied by +1.5 and the wrong ones by -0.4.

**2025-26 Academic year**

Reading skills and knowledge acquired during studies

**1. The human brain is an incredibly complex organ that processes vast amounts of information every second. Neuroscientists have found that the brain relies on both conscious and unconscious mechanisms to interpret the world. While conscious thought allows for deliberate decision-making, unconscious processing helps individuals react quickly to their environment. Studies suggest that many daily actions, such as recognizing a familiar face or catching a falling object, are primarily driven by unconscious processes rather than deliberate thinking.**

**According to the passage, which one of the following statements is true?**

- A) The brain processes information only when a person is actively thinking about it.
- B) Unconscious mechanisms play no role in decision-making.
- C) Many routine actions are influenced more by unconscious processing than conscious thought.
- D) Neuroscientists believe all brain functions occur at a conscious level.
- E) The passage states that unconscious processes are less important than conscious thought.

**2. Which one of the options The Renaissance was not characterized by?**

- A) A revival of classical Greek and Roman knowledge.
- B) A strict continuation of medieval scholastic traditions with little innovation.
- C) The development of linear perspective in visual arts.
- D) The invention of the printing press, which spread new ideas.
- E) A renewed focus on humanism and individual potential.

**3. The famous painting The Last Supper was created by:**

- A) Michelangelo
- B) Vincent van Gogh
- C) Leonardo da Vinci
- D) Pablo Picasso
- E) Rembrandt

**4. Who was the writer of the novel 1984, which describes a dystopian society under constant surveillance?**

- A) Aldous Huxley
- B) George Orwell
- C) F. Scott Fitzgerald
- D) J.R.R. Tolkien
- E) Ernest Hemingway

Logical reasoning and problem-solving

**5. A researcher is conducting an experiment in which participants must solve a series of puzzles under different conditions. In one condition, participants work alone, while in another, they work in teams. The researcher hypothesizes that teamwork leads to faster problem-solving due to idea sharing. The results show that teams, on average, solve puzzles in 40% less time than individuals. However, some individual participants performed as well as or better than some teams.**

**Which of the following conclusions is best supported by the information above?**

- A) Working in teams is always the best strategy for problem-solving.
- B) Teamwork generally leads to faster problem-solving, but individual performance can vary.
- C) Individual problem-solving is more effective than teamwork in most cases.
- D) The study proves that communication is the most important factor in solving puzzles.
- E) The study shows that intelligence is the only factor that determines problem-solving speed.

**6. A farmer has three types of animals: cows, chickens, and sheep.**

- The farm has a total of 96 animals.
- Cows and sheep together make up twice the number of chickens.
- There are three times as many cows as sheep.

**How many chickens does the farmer have?**

- A) 20
- B) 30
- C) 40
- D) 50
- E) 32

**7. Advancements in automation and robotics have transformed industries such as manufacturing and logistics. Robots can now perform tasks with high precision, reducing errors and increasing efficiency. However, concerns exist about their impact on employment, as machines can replace human workers in repetitive jobs. Some experts argue that automation creates new job opportunities in fields like engineering and AI development.**

**Which of the following, if true, would most strengthen the argument that automation benefits the economy?**

- A) Many companies hesitate to adopt automation due to high costs.
- B) Studies show that automation has led to an overall increase in employment in technology-driven industries.
- C) Some workers struggle to find new jobs after being replaced by machines.
- D) Automation is only beneficial in large scale manufacturing and has little impact on other industries.
- E) Countries with high automation rates have experienced significant job losses.

**8. A new language is being developed with specific rules for forming words.**

- Every word must start with a vowel (A, E, I, O, U).
- It must contain at least one consonant (B, C, D, etc.).
- It cannot have more than three vowels in total.

**Which of the following words would be valid in this language?**

- A) AEIOU
- B) ORB
- C) SKY
- D) EUOUA
- E) BIRD

**9. A scientist is studying the migration pattern of a rare bird species. She observes that every year, the birds travel twice the distance they did the previous year. In the first year, the birds migrate 100 km.**

**If this pattern continues, what will be the total distance traveled by the birds by the end of the fifth year?**

- A) 1,600 km
- B) 3,100 km
- C) 2,700 km
- D) 3,200 km
- E) 1,500 km

## Biology

**10. The cytoskeleton of a eukaryotic cell is composed of:**

- A) Phospholipids, cholesterol, and integral proteins
- B) Microfilaments, intermediate filaments, and microtubules
- C) Actin, collagen, and peptidoglycan
- D) Peroxisomes, ribosomes, and centrioles
- E) Cellulose, chitin, and keratin

**11. Which of the following is an example of codominance?**

- A) A red flower and a white flower producing pink offspring
- B) A mutation that prevents the expression of another gene
- C) Height in humans showing a wide range of values
- D) A single gene affecting multiple traits
- E) Blood type AB in humans

**12. Which of the following best describes the role of the sinoatrial (SA) node in the heart?**

- A) It pumps oxygenated blood into the aorta.
- B) It serves as the primary pacemaker, initiating electrical impulses.
- C) It prevents backflow of blood between heart chambers.
- D) It regulates blood pressure in the arteries.
- E) It transports oxygenated blood to the lungs.

**13. In which part of the nephron does most reabsorption of glucose occur?**

- A) Collecting duct
- B) Loop of Henle
- C) Proximal convoluted tubule
- D) Distal convoluted tubule
- E) Glomerulus

**14. In human females, one of the two X chromosomes is randomly inactivated in each cell during embryonic development. This results in the formation of a Barr body, a condensed structure of the inactivated X chromosome.**

**Which of the following is a direct consequence of X chromosome inactivation?**

- A) Males and females express X-linked genes at the same levels.
- B) Females produce twice as many X-linked gene products as males.
- C) The Y chromosome compensates for gene dosage differences.
- D) The inactivated X chromosome is degraded over time.
- E) All cells in a female body have the same active X chromosome.

**15. The fluid mosaic model describes the structure of the plasma membrane, which consists of a phospholipid bilayer with embedded proteins. Some of these proteins function as transporters, allowing specific molecules to enter or exit the cell. Others act as receptors, facilitating cell signaling. The fluid nature of the membrane is crucial for cell function, enabling endocytosis, cell movement, and interaction with the environment.**

**Which of the following observations would provide the strongest evidence supporting the fluid mosaic model of the plasma membrane?**

- A) Cells can selectively absorb and expel substances through active transport mechanisms.
- B) Membrane proteins and lipids are able to diffuse laterally within the bilayer.
- C) The plasma membrane contains carbohydrates attached to lipids and proteins.
- D) The membrane is impermeable to large, charged molecules without protein assistance.
- E) The phospholipid bilayer forms a continuous barrier that maintains cell integrity.

**16. The human circulatory system consists of two major circuits: the pulmonary circulation, which carries blood between the heart and the lungs, and the systemic circulation, which delivers oxygenated blood to tissues throughout the body. Blood pressure is regulated by a combination of cardiac output, vascular resistance, and kidney function.**

**Which of the following physiological changes would most likely result in an increase in blood pressure?**

- A) Vasodilation of arterioles
- B) Decreased heart rate
- C) Increased production of aldosterone by the adrenal glands
- D) Increased permeability of capillaries
- E) Reduced sodium reabsorption by the kidneys

**17. What is the main purpose of PCR (Polymerase Chain Reaction)?**

- A) To sequence entire genomes
- B) To cut DNA at specific sequences
- C) To amplify specific DNA segments
- D) To transfer genes between species
- E) To visualize DNA bands in gel electrophoresis

**18. Cellular respiration is a multi-step process that allows cells to generate ATP from glucose. The majority of ATP is produced in the mitochondria through oxidative phosphorylation, which relies on an electrochemical gradient across the inner mitochondrial membrane.**

**Which of the following would directly inhibit ATP synthesis in the mitochondria?**

- A) Increased availability of glucose
- B) Increased proton concentration in the mitochondrial matrix
- C) Increased production of NADH and FADH<sub>2</sub>
- D) Increased activity of glycolytic enzymes in the cytoplasm
- E) Decreased oxygen supply to the cell

**19. A rare dominant genetic disorder is found in a family where an affected father (heterozygous, Aa) and an unaffected mother (aa) have four children. What is the probability that at least one of their four children will inherit the disorder?**

- A) 50%
- B) 75%
- C) 94%
- D) 25%
- E) 6%

**20. During which phase of mitosis do sister chromatids separate and move to opposite poles of the cell?**

- A) Prophase
- B) Metaphase
- C) Anaphase
- D) Telophase
- E) Cytokinesis

**21. During translation, the sequence of mRNA codons determines the sequence of amino acids in a protein. Which of the following correctly describes the role of tRNA in this process?**

- A) tRNA carries mRNA to the ribosome for translation.
- B) tRNA contains codons that match the amino acids.
- C) tRNA directly synthesizes the peptide bonds between amino acids.
- D) tRNA is a structural component of the ribosome.
- E) tRNA brings amino acids to the ribosome and matches them to the correct mRNA codon using its anticodon.

**22. Which of the following statements correctly describes a key difference between mitosis and meiosis?**

- A) Mitosis produces four genetically diverse daughter cells, while meiosis produces two identical cells.
- B) Mitosis occurs in germ cells, while meiosis occurs in somatic cells.
- C) Homologous chromosomes pair up and exchange genetic material in meiosis but not in mitosis.
- D) DNA replication occurs twice in meiosis but only once in mitosis.
- E) The number of chromosomes remains unchanged after meiosis but is halved after mitosis.

**23. A mutation occurs in a gene, changing the codon UCA to UAA. What is the most likely consequence of this mutation?**

- A) A different amino acid will be incorporated, but the protein will remain functional.
- B) The mutation will have no effect because the genetic code is redundant.
- C) Translation will stop prematurely, likely resulting in a truncated and nonfunctional protein.
- D) The mutation will cause the ribosome to skip the codon and continue translation normally.
- E) The mutation will lead to a frameshift, altering the reading frame of the entire protein.

**24. A segment of DNA has the following sequence on the template strand:**

**3' - TAC GGT CAA TGA - 5'**

**What will be the corresponding mRNA sequence transcribed from this DNA?**

- A) 5' - AUG CCA GUU ACU - 3'
- B) 5' - ATG CCA GTT ACT - 3'
- C) 5' - UAC GGU CAA UGA - 3'
- D) 5' - TAC GGT CAA TGA - 3'
- E) 5' - UAG GGU CAA UGA - 3'

**25. A scientist isolates chloroplasts and exposes them to light in the absence of CO<sub>2</sub>. Which of the following will continue to occur?**

- A) The Calvin cycle will proceed normally.
- B) ATP and NADPH will be produced.
- C) Glucose will continue to be synthesized.
- D) Oxygen consumption will increase.
- E) The rate of photosynthesis will remain unchanged.



**26. A plant is exposed to only green light while kept under otherwise optimal conditions. What is the most likely outcome for photosynthesis?**

- A) The rate of photosynthesis will increase.
- B) The production of ATP and NADPH will stop completely.
- C) The plant will absorb more CO<sub>2</sub> and produce more glucose.
- D) The rate of photosynthesis will decrease.
- E) Photosynthesis will continue at the same rate as in white light.

**27. The nucleus is essential for cellular function because it houses the genetic material (DNA) and regulates gene expression. However, certain specialized cells, such as red blood cells, lack a nucleus.**

**Which of the following is a direct consequence of the absence of a nucleus in red blood cells?**

- A) They are unable to transport oxygen.
- B) They cannot produce ATP.
- C) They have a shorter lifespan due to the inability to repair damaged proteins.
- D) They contain more mitochondria to compensate for the lack of a nucleus.
- E) They undergo continuous cell division to replace old cells.

**28. Neurons communicate through electrical and chemical signals. The action potential is a rapid change in membrane potential that allows nerve impulses to be transmitted.**

**Which of the following best describes what occurs during the depolarization phase of an action potential?**

- A) Sodium ions (Na<sup>+</sup>) rush into the neuron, making the inside more positive.
- B) Potassium ions (K<sup>+</sup>) leave the neuron, making the inside more negative.
- C) The neuron returns to its resting membrane potential.
- D) The sodium-potassium pump actively restores ion balance.
- E) The neuron becomes temporarily unable to generate another action potential.

**29. Which part of the brain is primarily responsible for coordinating movement and maintaining balance?**

- A) Cerebrum
- B) Hypothalamus
- C) Cerebellum
- D) Medulla oblongata
- E) Thalamus

**30. A scientist is studying the structure of a newly discovered virus. She finds that its genome is composed of single-stranded RNA, and it is enclosed in a protein capsid with a surrounding lipid envelope.**

**Which of the following is true about this virus?**

- A) It cannot infect eukaryotic cells because it lacks DNA.
- B) It is likely to enter host cells by fusing with the plasma membrane.
- C) It replicates only in the cytoplasm and does not interact with the host nucleus.
- D) It cannot mutate because RNA viruses are genetically stable.
- E) It is unable to infect host cells without the presence of a bacterial vector.

**31. Which of the following is necessary for natural selection to occur?**

- A) Traits acquired during an organism's lifetime must be inherited.
- B) There must be variation in traits within a population.
- C) Individuals must all produce the same number of offspring.
- D) All mutations must be beneficial.
- E) Natural selection occurs only in response to environmental disasters.

**32. The enzyme amylase catalyzes the breakdown of starch into maltose. If an inhibitor is introduced and binds to the allosteric site of amylase, which of the following best describes how the enzyme will be affected?**

- A) The enzyme's active site will become blocked by the inhibitor.
- B) The inhibitor will compete directly with starch for the active site.
- C) The enzyme will permanently lose its function.
- D) The enzyme's shape will change, reducing its ability to bind to starch.
- E) The inhibitor will increase the rate of starch breakdown.

## Chemistry

**33. Which of the following statements about the addition polymerization of ethylene ( $C_2H_4$ ) is incorrect?**

- A) Addition polymerization often uses a radical initiator.
- B) In addition polymerization, double bonds are opened to form single bonds.
- C) Addition polymerization results in the formation of a high molecular weight compound.
- D) The molecular weight of the produced polyethylene is not constant.
- E) Polyvinyl chloride is produced as a result of the addition polymerization of ethylene.

**34. Which of the following does not produce a carboxylic acid upon oxidation?**

- A) Methanol ( $CH_3OH$ )
- B) Ethanol ( $C_2H_5OH$ )
- C) 2-Propanol ( $CH_3CHOHCH_3$ )
- D) 1-Propanol ( $CH_3CH_2CH_2OH$ )
- E) Butanol ( $C_4H_9OH$ )

**35. Which statement about benzene ( $C_6H_6$ ) is incorrect?**

- A) The six carbon atoms are arranged in a perfect hexagonal shape.
- B) All carbon-carbon bond lengths are equal.
- C) Benzene readily undergoes electrophilic substitution reactions.
- D) Benzene easily undergoes addition reactions due to its double bonds.
- E) Benzene has an extended conjugated system.

**36. The solubility product ( $K_{sp}$ ) of silver chloride ( $AgCl$ ) is  $1.8 \times 10^{-10}$ . What is the closest concentration of  $Ag^+$  ions in a 1L solution of pure water?**

- A)  $1.8 \times 10^{-5}$  mol/L
- B)  $1.3 \times 10^{-5}$  mol/L
- C)  $4.2 \times 10^{-5}$  mol/L
- D)  $8.4 \times 10^{-5}$  mol/L
- E)  $3.6 \times 10^{-5}$  mol/L

**37. Which metal does not produce hydrogen gas when reacting with dilute sulfuric acid?**

- A) Mg
- B) Zn
- C) Fe
- D) Cu
- E) Al

**38. For the reaction  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$  ( $\Delta H < 0$ ), what happens when the temperature is increased?**

- A) Shifts to the right (toward products)
- B) Shifts to the left (toward reactants)
- C) Initially shifts left, then gradually returns
- D) Initially shifts right, then gradually returns
- E) Unaffected by temperature, only influenced by pressure

**39. A hydrated copper(II) sulfate sample ( $\text{CuSO}_4 \cdot x\text{H}_2\text{O}$ ) weighs 2.50 g and is heated to remove the water of hydration. After heating, the remaining anhydrous  $\text{CuSO}_4$  weighs 1.60 g.**

**What is the value of x in  $\text{CuSO}_4 \cdot x\text{H}_2\text{O}$ ? (Cu=64, S=32, O=16, H=1)**

- A) 2
- B) 3
- C) 4
- D) 5
- E) 6

**40. Which statement about the triple point is incorrect?**

- A) The triple point is the temperature and pressure where solid, liquid, and gas coexist.
- B) The triple point of water is about  $0.01^\circ\text{C}$  and 0.006 atm.
- C) At the triple point, all phases can transition freely.
- D) Below the triple point pressure, water cannot exist as a liquid.
- E) Not all substances have a triple point.

**41. Which reaction is not a redox reaction?**

- A)  $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$
- B)  $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
- C)  $\text{Ba}(\text{OH})_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{H}_2\text{O}$
- D)  $2\text{H}_2\text{S} + \text{O}_2 \rightarrow 2\text{S} + 2\text{H}_2\text{O}$
- E)  $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$

**42. What volume (mL) of 0.200 mol/L NaOH is needed to completely neutralize 50.0 mL of 0.100 mol/L  $\text{H}_2\text{SO}_4$ ?**

- A) 12.5
- B) 25.0
- C) 50.0
- D) 75.0
- E) 100.0

**43. Copper(II) sulfate is known to have a solubility of 203 g in 100 g of water at 90 °C and 22 g in 100 g of water at 20 °C.**

**Initially, 40 g of water was heated to 90 °C and copper(II) sulfate was added until the solution was just saturated. The solution was then cooled to 20 °C when copper(II) sulfate separated out to leave a saturated solution.**

**Using the information provided in this question, what is the minimum mass of water that must now be added to the mixture of the solution and the solid in order to make this solid copper(II) sulfate redissolve at 20°C?**

- A) 25 g
- B) 110 g
- C) 750 g
- D) 180 g
- E) 330 g

**44. How many valence electrons does chlorine (atomic number 17) have?**

- A) 1
- B) 3
- C) 5
- D) 7
- E) 8

**45. Which of the following does not contain covalent bonds?**

- A) NaCl
- B) H<sub>2</sub>O (ice)
- C) Silicon dioxide (SiO<sub>2</sub>)
- D) Diamond
- E) Dry ice (CO<sub>2</sub>)

**46. A 36.5% hydrochloric acid solution has a density of 1.2 g/cm<sup>3</sup>.**

**What is its molarity? (relative atomic mass Cl=35.5, H=1)**

- A) 10.0 mol/L
- B) 11.2 mol/L
- C) 12.0 mol/L
- D) 13.2 mol/L
- E) 14.6 mol/L

**47. Which acid acts as the strongest acid in aqueous solution?**

- A) Hydrofluoric acid
- B) Hydrochloric acid
- C) Sulfuric acid
- D) Acetic acid
- E) Carbonic acid

Physics and Mathematics

**48. The expression  $(64^2)^{1/6}$  is equivalent to:**

- A) 8
- B) 16
- C) 4
- D)  $\sqrt[3]{16}$
- E) 32

**49. If  $2^{\log_2(x)} = 3$**

**Find  $x$ :**

- A) 4
- B) 3
- C) 2
- D) 1
- E) 1.5

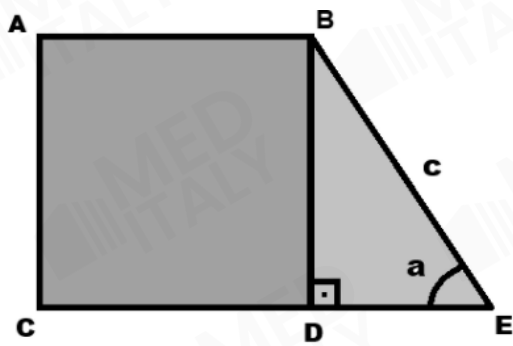
**50. A bowl contains 4 cashews, 5 peanuts, and 6 hazelnuts. If a person with a hazelnut allergy randomly selects three nuts and eats them one after another, what are the chances this person won't have an allergic reaction?**

- A) 12/65
- B) 56/375
- C) 18/225
- D) 18/65
- E) 12/225

**51. What is the surface area of a cylinder with a base radius of 7 cm, and a height of 5 cm?**

- A)  $98\pi \text{ cm}^2$
- B)  $126\pi \text{ cm}^2$
- C)  $119\pi \text{ cm}^2$
- D)  $168\pi \text{ cm}^2$
- E)  $132\pi \text{ cm}^2$

52.



Consider the shape above.

Given that ABCD is a square, and BDE is a right triangle, what is the perimeter of the trapezoid ABEC?

- A)  $4c + \cos(a) \times c$
- B)  $c + 3\cos(a) \times c + \sin(a) \times c$
- C)  $c + \cos(a) \times c + 3\sin(a) \times c$
- D)  $c + \cos(a) \times c + 4\sin(a) \times c$
- E)  $c + 5\cos(a) \times c$

53.

$$\frac{x^2 - 10x + 25}{8 - 7x} \geq 0$$

Which of the following is the solution to the inequality above?

- A) Each real  $x$  with  $x < 8/7$
- B) Each real  $x$  with  $x \geq 8/7$
- C) Each real  $x$  with  $x \leq 8/7$
- D) Each real  $x$  with  $x \leq 8/7$  and  $x > 5$
- E) Each real  $x$  with  $x > 8/7$

**54. A student picks up a 10-gram pencil from the ground and places it on a desk 1.5 meters high. If the lifting process takes 0.4 seconds, determine the average power exerted by the student. ( $g = 10\text{m/s}^2$ )**

- A) 1.42
- B) 37.5
- C) 142
- D) 0.375
- E) 15

**55. In a laboratory experiment, a conductor is connected to a power supply, and a current of 15A flows through it. If the resistance of the conductor is  $16\Omega$ , and it is replaced with another conductor with half of the original's resistance, what will be the difference in power that is dissipated between the two conductors?**

- A) 1800 W
- B) 3600 W
- C) 240 W
- D) 120 W
- E) 480 W

**56. An ideal gas is contained in a metal cylinder with a fixed piston. At the temperature  $26.85^\circ\text{C}$ , the gas exerts a pressure  $P$  on the cylinder. The temperature is then increased to  $176.85^\circ\text{C}$ , while the piston is pushed down so that the area occupied by the gas is halved.**

**What is the final pressure exerted by the gas?**

- A)  $3P$
- B)  $5P$
- C)  $2P/7$
- D)  $14P$
- E)  $7P$

**57. A vehicle starts from rest and accelerates uniformly at  $4\text{m/s}^2$  for 4 seconds. After this period, it continues moving at a constant velocity. What is the total distance traveled by the vehicle in 10 seconds from the moment it started moving?**

- A) 196m
- B) 64m
- C) 96m
- D) 200m
- E) 128m



**58. Two positive charges of  $4\ \mu\text{C}$  each are placed 4 m apart. What happens to the force between them if the distance between them and both of the charges doubles?**

- A) The force remains constant
- B) The force doubles
- C) The force halves
- D) The force is multiplied by 4
- E) The force is divided by 4

**59. Which of the following statements is false about simple pendulums?**

- A) The period of a simple pendulum depends on its length.
- B) The period of a simple pendulum is independent of the mass of the bob.
- C) In the absence of friction, the motion is a simple harmonic oscillation
- D) The period of a simple pendulum depends on the acceleration due to gravity.
- E) The speed of the pendulum bob is the greatest at the highest point of its swing.

**60. A car of mass 1,200 kg is moving at a speed of 20 m/s when the driver suddenly applies the brakes. The car comes to a complete stop in 4 seconds. Assuming the braking force is constant, what is the magnitude of the force applied by the brakes?**

- A) 3,000 N
- B) 6,000 N
- C) 9,600 N
- D) 12,000 N
- E) 15,000 N

–THE END–