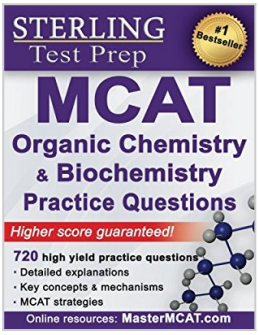

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· Molecular structure and absorption spectra
· Covalent bond
· Separations and purifications
· Aldehydes and ketones
· Alcohols
· Carboxylic acids
· Acid derivatives (anhydrides, amides,esters)
· Phenols
· Polycyclic and heterocyclic aromaticcompounds
· Amino acids, peptides, proteins
· Carbohydrates
· Lipids

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Editorial Review

From the Author

Organic chemistry and biochemistry are challenging disciplines and are heavily tested on the MCAT as part of "Chemical and Physical Foundations of Biological Systems" section and (to a much smaller percentage) "Biological and Biochemical Foundations of Living Systems" section of the MCAT 2017. This book provides 720 practice questions that test your knowledge of all organic chemistry and biochemistry topics on the MCAT 2017.

The explanations to these questions provide detailed solutions and cover a broad spectrum of concepts that you must be well-versed in to be able to answer related questions on the test and get a high score. **By reading these explanations carefully and understanding how they apply to solving the question, you will learn important concepts and the relationships between them.** This will prepare you for the test and you will **significantly increase your score.**

All the content of this MCAT organic chem and MCAT biochemistry 2016 book is prepared by our writers and editors to ensure strict adherence to the topics and skills outlined by the AAMC for the redesigned MCAT. These editors possess extensive credentials, were educated in top colleges and universities and have been admitted to medical school with stellar MCAT scores. They are experts on teaching, preparing students for the MCAT and have coached thousands of premeds on admission strategies.

Used books may have outdated content. We make content updates regularly based on customers' comments, editorial input and latest test changes. The most current version is only available directly from Amazon (*sold & shipped by Amazon*), Barnes & Noble and Sterling Test Prep web store.

From the Inside Flap
AAMC Foundational Concept 1: Biomolecules have unique properties that determine how they contribute to the structure and function of cells, and how they participate in the processes necessary to maintain life.

Amino acids:
· Description (absolute configuration at the alpha position; amino acids as dipolarions; classifications)
· Reactions (sulfur linkage for cysteine and cysteine; peptide linkage: polypeptides and proteins; hydrolysis)

Protein structure:
· Structure (1° and 2° structure of proteins; 3° structure of proteins, role of proline, cystine, hydrophobic bonding; 4° structure of proteins)
· Conformational stability (denaturing and folding, hydrophobic interactions; solvation layer)
· Separation techniques (isoelectric point; electrophoresis)

Carbohydrates:
· Description (nomenclature and classification, common names; absolute configuration; cyclic structure and conformations of hexoses; epimers and anomers)
· Hydrolysis of the glycoside linkage
· Monosaccharides
· Disaccharides

· Polysaccharides

AAMC Foundational Concept 3: Complex systems of tissues and organs sense the internal and external environments of multicellular organisms, and through integrated functioning, maintain a stable internal environment within an ever-changing external environment.

Lipids:
· Description; structure (steroids; terpenes and terpenoids; lipid components of plasma membrane)

AAMC Foundational Concept 4: Complex living organisms transport materials, sense their environment, process signals, and respond to changes using processes that can be understood in terms of physical principles.

Molecular structure and absorption spectra:
· Infrared region (molecular structure and absorption spectra; intramolecular vibrations and rotations; recognizing common characteristic group absorptions, fingerprint region)
· Visible region (absorption in visible region gives complementary color; effect of structural changes on absorption)
· Ultraviolet region (pi-electron and non-bonding electron transitions; conjugated systems)
· NMR spectroscopy (protons in a magnetic field; equivalent protons; spin-spin splitting)

AAMC Foundational Concept 5: The principles that govern chemical interactions and reactions form the basis for a broader understanding of the molecular dynamics of living systems.

Covalent bond:
· Stereochemistry of covalently bonded molecules (structural isomers; stereoisomers; conformational isomers; polarization of light, specificrotation; absolute and relative configuration: *R* and *S* forms, *E* and *Z* forms)

Separations and purifications:
· Extraction: distribution of solute between two immiscible solvents
· Distillation
· Chromatography: basic principles involved in separation process (column chromatography; paper chromatography; thin-layer chromatography)
· Separation and purification of peptides and proteins (electrophoresis; quantitative analysis; chromatography)
· Racemic mixtures, separation of enantiomers

Amino acids, peptides, proteins:
· Amino acids: description (absolute configuration at the alpha position; dipolar ions; classification; synthesis of alpha-amino acids)
· Peptides and proteins reactions (sulfur linkage for cysteine and cysteine; polypeptides and proteins; hydrolysis)
· General principles (primary structure of proteins; secondary structure of proteins; tertiary structure of proteins; isoelectric point)

Lipids (description, types):
· Storage (triacyl glycerols; free fatty acids, saponification)
· Structure (phospholipids and phosphatides; sphingolipids; waxes)

· Signals/cofactors (fat-soluble vitamins; steroids; prostaglandins)

Carbohydrates:
· Description (nomenclature and classification, common names; absolute configuration; cyclic structure and conformations of hexoses; epimers and anomers)
· Hydrolysis of the glycoside linkage
· Keto-enol tautomerism of monosaccharides
· Disaccharides
· Polysaccharides

Aldehydes and ketones:
· Description (nomenclature; physical properties)
· Important reactions (nucleophilic addition reactions at C=O bond; oxidation of aldehydes; reactions at adjacent positions: enolate chemistry)
· General principles (effect of substituents on reactivity of C=O; steric hindrance; acidity of alpha-H; carbanions)

Alcohols:
· Description (nomenclature; physical properties)
· Important reactions (oxidation; substitution reactions: SN1 or SN2; protection of alcohols; preparation of mesylates and tosylates)

Carboxylic acids:
· Description (nomenclature; physical properties)
· Important reactions (carboxyl group reactions; amides and lactam, esters and lactone, anhydride formation; reduction; decarboxylation)
· Reactions at 2-position, substitution

Acid derivatives (anhydrides, amides, esters):
· Description (nomenclature; physical properties)
· Important reactions (nucleophilic substitution; transesterification; hydrolysis of amides)
· General principles (relative reactivity of acid derivatives; steric effects; electronic effects; strain)

Phenols:
· Oxidation and reduction

Polycyclic and heterocyclic aromatic compounds:
· Biological aromatic heterocycles

From the Back Cover

Scoring well on the MCAT is extremely important for admission into medical school. To achieve a high score, you need to develop skills to properly apply the knowledge you have and quickly choose the correct answer. Understanding key concepts, having the ability to extract information from the passages and distinguishing between similar answer choices is more valuable than simply memorizing terms. That is why you must solve numerous practice questions.

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Users Review

From reader reviews:

Lisa Hegland:

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