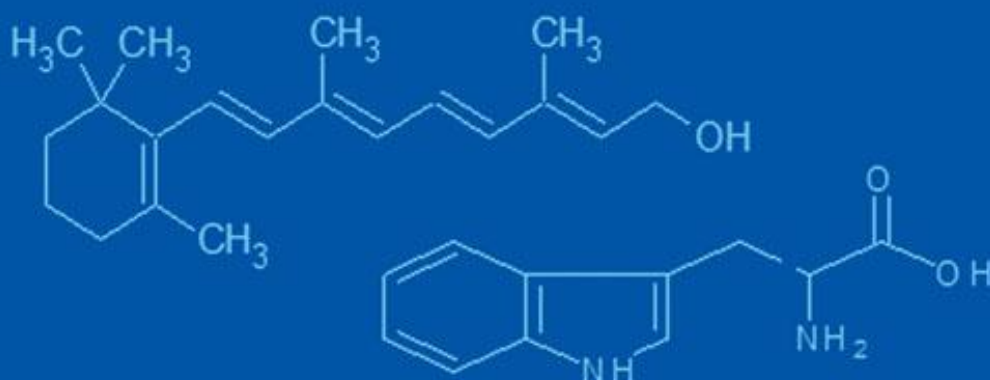


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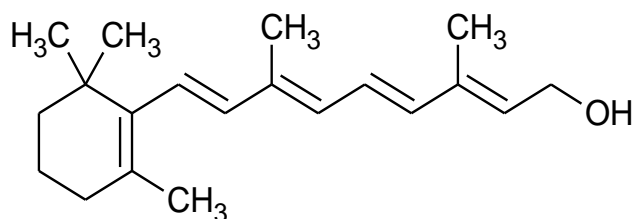
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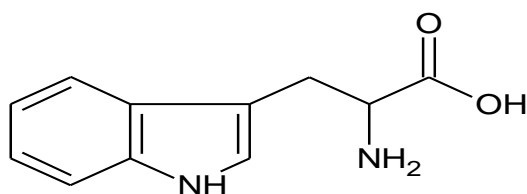


Victor J. Temple

BIOCHEMISTRY
1001 Review and Viva Voce
QUESTIONS AND ANSWERS APPROACH



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**BIOCHEMISTRY 1001 REVIEW AND VIVA VOCE
QUESTIONS AND ANSWERS APPROACH**

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PREFACE

This is the 2nd Edition of Biochemistry Revision: Questions and Answers Approach. This 2nd Edition has been updated with the addition of four new chapters, including the chapter on Molecular Biology. The main objective of this book is to provide a simple comprehensive revision of major biochemical concepts that enable students to appreciate the relevance of biochemistry to medicine as well as to everyday life. The book is based primarily on the Biochemistry courses taught to undergraduate (medical, dentistry and health sciences) students in the School of Medicine and Health Sciences (SMHS), University of Papua New Guinea (UPNG). The MBBS program uses the problem-based integrated curriculum in which Biochemistry is taught throughout the duration of the program. The Health Sciences and Dentistry programs use the didactic curriculum in which Biochemistry is taught in the first and second years of each program.

The questions and answers approach adopted in this book should enable students discern core information from that which is peripheral. The book is designed to give students rapid, easy access to the core factual material in a format which facilitates learning and rapid revision. It is hoped that this book will serve as the final preparatory step for the examination in biochemistry. This book should not be used as a replacement for standard biochemistry text book, nor should it prevent the student from attending routine lectures (seminars) or thoroughly revising the various biochemistry topics completed during the semester or trimester. The best way to use this book is for the student to first answer each question before proceeding to the answer section to read the prepared answer.

This book contains special topics in biochemistry (Clinical Biochemistry) with questions and answers that are more relevant to the MBBS problem-based integrated curriculum. Candidates doing the Master of Medicine (M. Med) Part-1 Common Core program in the SMHS UPNG should find this book useful.

The answers provided in this book were obtained from very reliable sources; they were checked and found to be correct and acceptable at the time of publication. However, the possibility of inadvertent errors cannot be totally ruled out; therefore, students are requested to double check the facts presented with other standard texts in biochemistry. A list of references and materials for further reading has been included in the reference section of this book. Constructive comments and recommendations for improvement in the next edition of this book are most welcome by the author.

Victor J. Temple

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I would also like to express my special thanks to my closest family members, Olga Temple and Vicky Temple, for their patience, and continuous and unwavering support.

ABBREVIATIONS

ACAT: Acyl-CoA Cholesterol Acyl-Transferase
ACE: Angiotensin Converting Enzyme
AEE: Activity-related Energy Expenditure
Ach: Acetylcholine
ACP: Acyl Carrier Protein
ACTH: Adrenocorticotropic Hormone
ADP: Adenosine Diphosphate
AIDS: Acquired Immune Deficiency Syndrome
ALA: Amino-Laevulinic Acid
ALP: Alkaline Phosphatase
ALT: Alanine Transaminase
AMP: Adenosine Monophosphate
APR: Acute Phase Reactants
Aspartate Transaminase
ATP: Adenosine Triphosphate
ATPase: Adenosine Triphosphatase
AVP: Arginine Vasopressin
BBB: Blood Brain Barrier
BCB: Blood-Cerebrospinal fluid Barrier
BMI: Body Mass Index
2,3-BPG: 2,3-Bis-Phosphoglycerate
BUN: Blood Urea Nitrogen
CAH: Congenital Adrenal Hyperplasia
CoA: Coenzyme A
c-AMP: 3',5'cyclic AMP
CC: Creatinine Clearance
CDP: Cytidine Diphosphate
c-GMP: cyclic-GMP
CK: Creatine Kinase
COMT: Catechol-O-Methyl-Transferase
CoQ: Cytochrome Q (Ubiquinone)
CRH: Corticotropin Releasing Hormone
COX: Cyclooxygenase
DEE: Daily Energy Expenditure
DKA: Diabetic Ketoacidosis
DNA: Deoxyribonucleic Acid
ECF: Extracellular Fluid
EPI: Extrinsic Pathway Inhibitor
EPO: Erythropoietin
ER: Endoplasmic Reticulum
ETC: Electron Transport Chain
FAD: Flavin Adenine Dinucleotide (oxidized)
FADH₂: Flavin Adenine Dinucleotide (reduced)
FBG: Fasting Blood Glucose
FMN: Flavin Mononucleotide (oxidized)
FSH: Follicle Stimulating Hormone
GAG: Glycosaminoglycans

GABA: Gamma Amino Butyric Acid
GDM: Gestational Diabetes Mellitus
GFR: Glomerular Filtration Rate
GGTP: Gamma Glutamyl Transpeptidase
GMP: Guanosine Monophosphate
G-6-PD: Glucose-6-Phosphate Dehydrogenase
GSH: Glutathione (Reduced)
GSSG: Glutathione (Oxidized)
GTP: Guanosine Triphosphate
Hb: Hemoglobin
HbO₂: Oxy-haemoglobin
HDL: High Density Lipoprotein
HGPR: Hypoxanthine-Guanine Phospho-Ribosyl-Transferase
HHb: Reduced Hemoglobin (Deoxy-Hemoglobin)
HIV: Human Immunodeficiency Virus
HMG-CoA: 3-Hydroxy-3-Methyl-Glutaryl-CoA
HMM: Heavy Meromyosin
HMP-shunt: Hexose Monophosphate Shunt (pathway)
HVA: Homovanillic Acid
ICF: Intracellular Fluid
ID: Iodine Deficiency
IDD: Iodine Deficiency Disorders
IDL: Intermediate Density Lipoprotein
Ig: Immunoglobulin
IP₃: Inositol 1,4,5-triphosphate
LACI: Lipoprotein-Associated Coagulation Inhibitor
LCAT: Lecithin-Cholesterol Acyl-Transferase
LDH: Lactate Dehydrogenase
LFT: Liver Function Tests
LH: Luteinizing Hormone
LMM: Light Meromyosin
MAU: Microalbuminuria
MNP: Micronutrient Powder
MSH: Melanocyte Stimulating Hormone
MAO: Monoamine Oxidase
NAD: Nicotinamide Adenine Dinucleotide (oxidized)
NADH: Nicotinamide Adenine Dinucleotide (reduced)
NADP: Nicotinamide Adenine Dinucleotide Phosphate (oxidized)
NADPH: Nicotinamide Adenine Dinucleotide Phosphate (reduced)
NMDA: N-Methyl-D-Aspartate
OG: Osmolal Gap
OGTT: Oral Glucose Tolerance Test
PCOS: Polycystic Ovarian Syndrome
PLA₂: Phospho-Lipase A₂
PLWHA: People Living with HIV/AIDS
POMC: Proopiomelanocortin
PPi: Inorganic Pyrophosphate
PTH: Parathyroid Hormone
RBG: Random Blood Glucose
REE: Resting Energy Expenditure

RER: Rough Endoplasmic Reticulum
RFLP: Restriction Fragment Length Polymorphism
RNA: Ribonucleic Acid
RPF: Renal Plasma Flow
RTA: Renal Tubular Acidosis
RUF: Ready-to-Use Foods
RUTF: Ready-to-Use Therapeutic Foods
SAC: Surface Active Compounds
SER: Smooth Endoplasmic Reticulum
SHBG: Sex Hormone Binding Globulin
STKM: Sucrose, Tris-buffer, K (potassium), Magnesium
STR: Short Tandem Repeat
TAFI: Thrombin-Activatable Fibrinolytic Inhibitor
TBG: Thyroid Binding Globulin
TEE: Total Energy Expenditure
TFPI: Tissue Factor Pathway Inhibitor
TPP: Thiamine Pyrophosphate
TSH: Thyroid Stimulating Hormone
UDP: Uridine Diphosphate
UDP-GT: UDP-Glucuronyl Transferase
USI: Universal Salt Iodization
UTP: Uridine Triphosphate
VLDL: Very Low Density Lipoprotein
VMA: Vanillylmandelic Acid

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