

### COMPREHENSIVE REVIEWER

Based on the

#### NCBTS

Table of Specifications (TOS)

**Specialization** 

BIOLOGICAL SCIENCE



# COMPREHENSIVE

COMPREHENSIVE REVIEWER

Based on the

NCBTS

TABLE OF SPECIFICATIONS
(TOS)

**Specialization** 

BIOLOGICAL SCIENCE

## Comprehensive LET Reviewer Based on the NCBTS and Table of Specifications (TOS) Specialization - BIOLOGICAL SCIENCE

Copyright © 2018

by

DR. BRENDA B. CORPUZ DR. RUBEN E. FALTADO III

and

LORIMAR PUBLISHING, INC.

ISBN 978-621-8035-28-7

Published by LORIMAR PUBLISHING, INC.

776 Aurora Blvd., cor. Boston Street, Cubao, Quezon City, Metro Manila Tel. Nos. 721-2715, 727-3386, 723-1560 Cellphone No. 0918-5375190 Fax (632) 727-3386

Cover design by Ronnie Llena Martinez

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, mimeographing, or by any information and retrieval system, without written permission from the copyright holder. information and retrieval system, without written permission from the copyright holder.

To purchase additional copies of this Reviewer call **LORIMAR PUBLISHING, INC.**Tel. Nos. 721-2715 • 723-1560 • 727-3386 • CP No. 0918-5375190
Telefax (632) 727-3386. Email: **publishedbylorimar@yahoo.com** 

		Pages
1.	Biological Science 1 – Plant and Animal Biology	1
	1.1 Explain the basic principles of classification in biology	2
	1.2 Analyze the relationships among levels of classification	2
	1.3 Cite the contributions of major taxonomists	2
	1.4 Classify the major taxonomic groups (monerans, protists, fungi, plants, and animals)	3
	Analyze how a dichotomous key can be used in classifying plants and animals based on structure and function	3
	1.6 Identify the basic need of plants and animals for growth and development	4
	1.7 Determine beneficial/harmful plants and animals	5
2.	Biological Science 2	6
	2.1 Show the relationship of the basic processes needed to maintain homeostasis	
	(i.e., autotrophic nutrition, heterotrophic nutrition, transport of materials, respiration, excretion, regulation and locomotion)	6
	2.2 Explain the basic steps in the acquisition and release of energy in living organisms	8
	2.3 Compare the processes of asexual and sexual reproduction in terms of methods and results	9
	2.4 Analyze physical/behavioral adaptations of selected organisms	10
	2.5 Apply the principle: "There is unity in diversity in the study of biology".	11
	2.6 Explain the principle: "There is complementarity between structure and function".	11
3.	Inorganic Chemistry	13
	3.1 Describe the structure and function of the following: atoms, ions, and elements; molecules and compounds; and chemical bonds	13
	3.2 Interpret chemical notation	14
	3.3 Interpret the periodic table	14
	3.4 Explain chemical bonding and molecular structure	15
4.	Cell Biology	16
	4.1 Describe the development of Cell theory	16
	4.2 Differentiate prokaryotic from eukaryotic cell	17
	4.3 Compare the structure and function of a plant and an animal cell	17
	4.4 Explain the processes of transporting materials into and out of cells	18
	4.5 Describe the basic processes in mitosis and the result of its malfunction	19
	4.6 Describe the basic processes in meiosis	20

		Pages	
5.	Ecology		
	5.1 Characterize natural and man-made ecosystems	21	
	5.2 Describe an ecosystem as a community interacting with the physical factors of the environment	22	
	5.3 Explain the interdependence of organisms with each other and their environment	22	
	5.4 Describe some changes caused by energy relationships in the ecosystem	23	
	5.5 Explain the concept of the niche	24	
	5.6 Trace the flow of energy and matter through the ecosystem		
	5.7 Describe biomes	24	
	5.8 Describe the evolution of ecosystems	25	
	5.9 Demonstrate awareness and deep concern for environmental problems which		
	are brought about by fast growing population, wasteful consumption of energy, destruction and neglect of habitat	25	
6.	Organic Chemistry		
	6.1 Describe the characteristics of carbon and water	26	
	6.2 Correlate structure with properties of organic compounds	27	
	6.3 Describe basic reactions of carbon compounds	28	
7.	Microbiology	30	
	7.1 Describe the characteristics of bacteria, protists, and viruses	30	
	7.2 Classify bacteria, protists, and viruses	31	
	7.3 Analyze the beneficial/harmful effects of microorganisms to humans, other organisms and the environment	32	
8.	Genetics and Evolution	33	
	8.1 Analyze the major points of Mendel's experiments	33	
	8.2 Describe the role of chromosomes in heredity	34	
	8.3 Describe the effects of dominance and recessiveness in heredity	34	
	8.4 Solve basic problems on heredity: sex-linked characteristics, incomplete dominance, co-dominance, and polygenic inheritance	35	
	8.5 Explain the role of environment in inheritance	35	
	8.6 Describe the nature, expression, and regulation of gene action	36	
	8.7 Identify some genetic disorders (e. g. Down syndrome, Alzheimer's disease, color blindness, cleft palate)	36	

			Page:	
		dentify the causes of mutations (radiation, chemicals, inherited disposition, bacteria, viruses)	36	
		Cite contributions of genetics in the fields of medicine and agriculture	37	
		Explain the mechanism of evolution	37	
9.	Bioc	hemistry	39	
		Describe the structure and functions of the following: Lipids, Carbohydrates, Proteins, Amino Acids and Nucleic Acids	39	
		Describe the basic reactions of lipids, carbohydrates, proteins, amino acids, and nucleic acids	41	
10.	Anat	omy and Physiology	43	
	10.1	Describe the levels of organization of bodies of organisms	43	
	10.2	Describe the parts and functions of the following systems: Skeletal, muscular and integumentary, Digestive, Respiratory and excretory, Circulatory, Lymphatic and immune, Nervous, Endocrine, and Reproductive	44	
	10.3	Cite instances when body systems work together	46	
	10.4	Describe the common diseases	46	
	10.5	Describe how to maintain one's health (proper hygiene, regular exercise and balanced diet)	46	
	10.6	Describe how to make an infusion/ decoction/ poultice using common medicinal plants	47	
	10.7	Manifest awareness about discoveries, inventions and breakthroughs that have improved the quality and longevity of life	47	
11.	Biotechniques			
	11.1	Determine the appropriate materials needed to teach selected concepts in biology	48	
	11.2	Determine the appropriate steps in making and using biological specimens (e. g. fixed slides)	48	
	11.3	Identify improvised/alternative materials and equipment for basic biotechniques	49	
12.	Statistics for Biology			
	12.1	Analyze tabulated data and graphs	50	
	12.2	Determine the appropriate graphical presentation of collected data	51	
	12.3	Determine the appropriate statistical tool in biological studies: frequency counts, ratio and proportion, probability (chi square) measures of central tendency and dispersion, comparison of means (t-test and ANOVA), correlation and regression	53	

			Pages		
13.	Phys	ics for Health Sciences 2	54		
	13.1	Analyze energy transformation and transfer that occur in a system in terms of Law of Conservation Energy	54		
	13.2	Characterize how heat is transferred in solids, liquids and gases by conduction, convection and radiation	54		
	13.3	Apply thermodynamic principles in environmental phenomena (e. g. food chains and food webs	55		
14.	I. History and Philosophy of Science		56		
	14.1	Analyze the major advances in science which had beneficial / harmful impacts on humans and the environment	56		
	14.2	Trace the development of scientific knowledge	56		
		v and Rationalizations58			
Bibliography10					
		Certificate of Recognition and Professional ID10			
Sample Answer Sheet					

## Special Features of this LET Reviewer

- Comprehensive and Focused It covers all the competencies for the tests in BIOLOGICAL SCIENCE as field of Specialization contained in the Table of Specifications (TOS) for the Licensure Examination for Teachers (LET).
- Quality Test Items These are test items that measure HOTS written by highly selected pool of experts in teacher education and Biological Science.
- Simulation for Shading of Answer Sheet It gives the LET reviewee a first hand experience on shading LET-like answer sheets which are attached to the reviewer.
- Notes Provided Where there is a need for additional notes, these are provided for the reviewee to master concepts.
- Test Items Contains two hundred sixty five (265) items adequately sampling all competencies.
- Additional References To ensure the mastery of LET competencies, print and e-references for further reading are provided for every competency.