آغا خان یونیورسٹی ایگزامینیشن بورڈ

AGA KHAN UNIVERSITY EXAMINATION BOARD

Teaching and Learning Resources for Grade IX Biology

Recommended Key Textbook:

Biology for Grade 9, PLD, Lahore

Additional Recommended Resource Material				
Topic No.	**Topic Title**	**Reference Book**	**Topic in the Reference Book**	**Reference Website**
1	Introduction to Biology	*Textbook for Biology IX* (2007). Punjab Textbook Board. Lahore.	Topic 1: Introduction to Biology	
2	Solving a Biological Problem	*Textbook for Biology IX* (2007). Punjab Textbook Board. Lahore.	Topic 1: Introduction to Biology	https://opentextbc.ca/biology/chapter/1-2-the-process-of-science/
3	Biodiversity	*Textbook for Biology IX* (2007). Punjab Textbook Board. Lahore.	Topic 4: Viruses, Bacteria and Cyanobacteria Topic 5: Fungi and Algae Topic 6: Bryophytes Topic 7: Tracheophytes or Vascular Plants Topic 8: Invertebrates Topic 9: Chordates/ Vertebrates	
		Mackean D. G. (2nd Edition). IGCSE Biology. Hodder Education. London.	Topic 26: Human Impact on the Environment	

Topic No.	Topic Title	Reference Book	Topic in the Reference Book	Reference Website
		Advanced Biology by Michael Kent Oxford University Press	Topic 21: The Variety of Living things Topic 23: Applied Ecology Sub-topic 23.5: Deforestation Sub-topic 23.10: Biological Conservation	
4	Cells and Tissues	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 3: Diffusion, Osmosis, Surface Area to Volume Ratio	https://rwu.pressbooks.pub/bio103/chapter/membrane-transport/
		Advanced Biology by Michael Kent Oxford University Press	Topic 4: Cells Sub-topic 4.1: Cell Theory Sub-topic 4.2: Microscope Sub-topic 4.3: Ultrastructure of Animal Cells Sub-topic 4.3: Ultrastructure of Plant and Bacteria Cells Sub-topic 4.6: Cell Membrane Sub-topic 4.7: Diffusion Sub-topic 4.8: Active Transport Sub-topic 4.9: Osmosis Sub-topic 4.13: Cells, Tissues and organs	
5	Gaseous Exchange	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 10: Respiration Topic 16: Drugs	
		Advanced Biology by Michael Kent Oxford University Press	Topic 7: Gaseous Exchange and transport in mammals Sub-topic 7.1: Gaseous Exchange System Sub-topic 7.2: Ventilation Sub-Topic 7.3: Gaseous Exchange in Alveoli	

Topic No.	Topic Title	Reference Book	Topic in the Reference Book	Reference Website
6	Enzymes	Advanced Biology by Michael Kent Oxford University Press	Topic 3: Metabolic Reactions	
7	Bioenergetics	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 7: Nutrition in Plants Topic 10: Respiration	
		Advanced Biology by Michael Kent Oxford University Press	Topic 5: Photosynthesis Topic 6: Respiration	
8	Nutrition and Digestion	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 5: Nutrition Topic 6: Nutrition in Mammals	
		Textbook for Biology IX (2007). Punjab Textbook Board. Lahore.	Topic 10: Food and Nutrition	
		Advanced Biology by Michael Kent Oxford University Press	Topic 9: Heterotrophic Nutrition	
9	Transport	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 8: Transport in Mammals Topic 9: Transport of Materials in Flowering Plants	
		Mackean D. G. (2nd Edition). IGCSE Biology. Hodder Education. London.	Topic 12: The Blood Circulatory System	
		Advanced Biology by Michael Kent Oxford University Press	Topic 7: Gaseous Exchange and Transport in Mammals Topic 13: Structure and Transport in Plants	

Note: This resource list has been prepared primarily for teachers. While it can be shared with students, students should not be required to buy multiple books. Schools are encourages to stock these books in the library. Moreover, these are only suggestions which have been compiled for the ease of teachers and students; schools are encouraged to use other resources for teaching and learning as well, as long as they are in line with the student learning outcomes (SLOs) mentioned in AKU-EB syllabi. Unless specified, AKU-EB does not endorse any of these books or websites. You are advised to use an ad-blocker while accessing the websites. In case any website is not functional for any reason, you may inform us at examination.board@aku.edu for an alternative or search material via any search engine. If you have any query, please contact us via email.

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Teaching and Learning Resources for Grade X Biology

Recommended Key Textbook:

Biology for Grade 10, PLD, Lahore

Additional Recommended Resource Material				
Topic No.	**Topic Title**	**Reference Book**	**Topic in the Reference Book**	**Reference Website**
10	Cell Cycle	*Textbook for Biology IX* (2007). Punjab Textbook Board. Lahore.	Topic 5: Cell Cycle	
		Advanced Biology by Michael Kent Oxford University Press	Topic 4: Cells Sub-topic 4.11: Mitosis Sub-topic 4.12: Meiosis	
11	Homeostasis	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 11: Excretion Topic 12: Homeostasis	
		Advanced Biology by Michael Kent Oxford University Press	Topic 8: Homeostasis	

Topic No.	Topic Title	Reference Book	Topic in the Reference Book	Reference Website
12	Coordination and Control	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 14: Co-ordination and Response: II Animal Receptor Organs Topic 15: Co-ordination and Response: III Hormones and Endocrine Glands	
		Textbook for Biology X (2007). Punjab Textbook Board. Lahore.	Topic 15: Co-ordination	
		Advanced Biology by Michael Kent Oxford University Press	Topic 10: Nervous and Hormonal Coordination Sub-topic 10.1: Nerves and Hormones Sub-topic 10.2: Mammalian Endocrine System Sub-topic 10.7: Mammalian Nervous System Sub-topic 10.8 Animal Senses Sub-topic 10.9 Structure of the Human Ear Sub-topic 10.10 Mechanoreceptors in the Human Ear Sub-topic 10.11: Structure of the Human Eye Sub-topic 10.12: The Retina and Vision Sub-topic 10.13: The Human Brain Sub-topic 10.14: The Hypothalamus, Pituitary and Thyroid gland	

Topic No.	Topic Title	Reference Book	Topic in the Reference Book	Reference Website
13	Support and Movement	*Textbook for Biology X* (2007). Punjab Textbook Board. Lahore.	Topic 14: Support and Movement	
		Mackean D. G. (2nd Edition). IGCSE Biology. Hodder Education. London.	Topic 17: The skeleton, Muscles and Movement	
		Advanced Biology by Michael Kent Oxford University Press	Topic 11: Locomotion and Behaviour Sub-topic 11.2: Vertebrate Endoskeleton Sub-topic 11.3: Muscles and Joints	
14	Reproduction	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication. *Textbook for Biology X* (2007). Punjab	Topic 20: Reproduction in Plants	
		Textbook Board. Lahore.	Topic 16: Reproduction	
		Advanced Biology by Michael Kent Oxford University Press	Topic 12: Animal Reproduction Sub-topic 12.1: Reproduction Sub-topic 12.2 The Mammalian Reproductive System Sub-topic 12.3: Gametogenesis Topic 14: Reproduction and Coordination in Flowers	

Topic No.	Topic Title	Reference Book	Topic in the Reference Book	Reference Website
15	Inheritance	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 22: Heredity	
		Mackean D. G. (2nd Edition). IGCSE Biology. Hodder Education. London.	Topic 21: Cell Division, Chromosomes and Genes Topic 23: Variation, Selection and Evolution	
		Advanced Biology by Michael Kent Oxford University Press	Topic 18: Molecular Biology of the Gene Sub-topic 18.1: DNA Structure Sub-topic 18.2: Chromosomes Sub-topic 18.3: DNA Replication Topic 19: Inheritance Topic 20: Evolution Sub-topic20.2: Evidence for Evolution Sub-topic 20.4: Natural Selection	
16	Man and his Environment	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 18: Ecology	
		Mackean D. G. (2nd Edition). IGCSE Biology. Hodder Education. London.	Topic 25: The Interdependence of Living Organisms Topic 26: The Human Impact on the Environment	
		Advanced Biology by Michael Kent Oxford University Press	Topic 22: Environmental Biology	

Topic No.	Topic Title	Reference Book	Topic in the Reference Book	Reference Website
17	Biotechnology	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 17: Microorganisms and their Applications in Biotechnology	
		Mackean D. G. (2nd Edition). IGCSE Biology. Hodder Education. London.	Topic 24: Applied Genetics	
		Advanced Biology by Michael Kent Oxford University Press	Topic 18: Molecular Biology of the Gene Sub-topic: 18.9: Genetic Engineering Technique	
18	Pharmacology	Kwan Pang L. and Lam Eric YK (2004). *Biology A course for "O Level"*. Singapore: Federal Publication.	Topic 16: Drugs	
		Advanced Biology by Michael Kent Oxford University Press	Topic 16: Non-Infectious Diseases Sub-topic 16.11: Drugs	

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