

Chapter I: Terminology in Biology

Exercise I: Extended Short Answer Questions

1. Root vs Suffix

- The **root** is the central part of a word that carries the main meaning (e.g., *cardi* = heart).
- The **suffix** is added at the end and indicates condition, process, study, or disease (e.g., *-itis* = inflammation).

2. Why Greek and Latin?

- They are universal scientific languages.
- They provide precision and stability.
- They avoid confusion between modern languages.

3. Role of Prefixes

Prefixes modify or refine the meaning of the root and allow understanding of unfamiliar terms.

4. Examples

- Hyperthermia (high temperature) vs Hypothermia (low temperature)
- Biotic (living) vs Abiotic (non-living)

5. Scientific vs Common Language

Scientific terminology is precise and standardized; common language is general and sometimes ambiguous.

Exercise II: True or False

- Derm refers to muscle. → **False** (skin)
- Osteo relates to bone. → **True**
- Carditis means inflammation of the heart. → **True**
- Bradycardia means fast heart rate. → **False** (slow)
- Poly- always means excessive. → **False** (means many)
- Subcutaneous means under the skin. → **True**
- Endothermic means producing heat internally. → **True**
- Abiotic refers to living factors. → **False** (non-living)

Exercise III: Prefix Recognition (Term / Prefix / Meaning)

Term	Prefix	Meaning
Submarine	Sub-	Under
Bradycardia	Brady-	Slow
Tachypnea	Tachy-	Fast
Perinatal	Peri-	Around
Epiphyte	Epi-	Upon
Transgenic	Trans-	Across
Monoculture	Mono-	One
Multicellular	Multi-	Many
Anaerobic	An-	Without
Postnatal	Post-	After

Exercise IV: Root Recognition (Term / Root / Meaning)

Term	Root	Meaning
Osteoporosis	Osteo	Bone
Cardiovascular	Cardio	Heart
Hepatocyte	Hepato	Liver
Nephrology	Nephro	Kidney
Arthropod	Arthro	Joint
Hemoglobin	Hemo	Blood
Phagocytosis	Cyto	Cell
Cytoplasm	Cyto	Cell
Myocardium	Myo	Muscle
Angiology	Angio	Vessel

Exercise V: Suffix Recognition (Term / Suffix / Meaning)

Term	Suffix	Meaning
Bacteremia	-emia	Blood condition
Neuralgia	-algia	Pain
Biology	-logy	Study of
Dermatitis	-itis	Inflammation
Evolution	-tion	Process
Respiration	-tion	Process
Adaptation	-tion	Process
Fertilization	-ation	Process
Parasitism	-ism	Condition
Symbiosis	-osis	Condition

Exercise VI: Complete Morphological Analysis (Term / Prefix / Root / Suffix / Meaning)

Term	Prefix	Root	Suffix	Meaning
Hypothermia	Hypo-	Therm	-ia	Low temperature
Hyperthyroidism	Hyper-	Thyroid	-ism	Excess thyroid activity
Endoparasite	Endo-	Parasite	—	Parasite inside
Ectoderm	Ecto-	Derm	—	Outer layer
Polyploidy	Poly-	Ploid	-y	Many chromosome sets
Antibiotherapy	Anti-	Bio	-therapy	Treatment against life (bacteria)
Hematology	—	Hemato	-logy	Study of blood
Autolysis	Auto-	Lysis	—	Self-destruction
Biotechnology	Bio-	Techno	-logy	Study of biological technology
Photosystem	Photo-	System	—	Light reaction unit

Exercise VII: Matching

Prefix	Meaning	Example Term	Explanation of the Term
A- / An-	Absence of	Asexual	Reproduction without gametes or fertilization
		Anaerobic	Living or occurring without oxygen
Epi-	Above / Upon	Epidermis	The outer layer of the skin (above the dermis)
		Epiphyte	A plant that grows upon another plant
Sub-	Under / Below	Subcutaneous	Located under the skin

		Submarine	Under the sea
Inter-	Between	Intercellular	Between cells
		Intercostal	Between the ribs
Intra-	Within	Intracellular	Within a cell
		Intravenous	Within a vein
Macro-	Large	Macroscopic	Visible to the naked eye
		Macromolecule	A very large molecule (e.g., proteins, DNA)
Neo-	New	Neonate	A newborn individual
		Neoplasm	New and abnormal growth of tissue
Dys-	Difficult / Abnormal	Dysfunction	Impaired or abnormal function
		Dysplasia	Abnormal development of tissue
Oligo-	Few / Small amount	Oligosaccharide	A carbohydrate made of few sugar units
		Oligotrophic	Environment containing few nutrients
Pan-	All	Pandemic	A disease affecting all people or countries
		Pancreas	Organ involved in many (all) digestive and hormonal functions

Exercise VIII: Word Construction (Higher Level)

Build the correct biological term from the clues:

- Study of blood → Hematology
- Inflammation of liver → Hepatitis
- Fear of insects → Entomophobia
- Excessive growth → Hyperplasia
- Cell that eats bacteria → Phagocyte
- Slow breathing → Bradypnea
- Condition of no oxygen → Anoxia
- Disease caused by fungi → Mycosis
- Surgical removal of kidney → Nephrectomy
- Study of tissues → Histology

Exercise IX: Interpretation Using Logic (Term / Breakdown / Meaning)

- Endocytosis → Endo (inside) + cyto (cell) + osis (process) → intake into cell
- Exothermic → Exo (outside) + therm (heat) → releasing heat
- Polysaccharide → Poly (many) + sacchar (sugar) → complex sugar
- Heterogeneous → Hetero (different) + gene (kind) → different composition
- Microorganism → Micro (small) + organism → small living being
- Hyperplasia → Hyper (excess) + plasia (formation) → excessive growth
- Hypotension → Hypo (low) + tension → low blood pressure
- Monosaccharide → Mono (one) + sacchar (sugar) → simple sugar
- Biodistribution → Bio (life) + distribution → spread in organism
- Autophagy → Auto (self) + phagy (eat) → self-digestion

Exercise X : Analytical Comparison (Concept / Explanation)

- Bradycardia vs Tachycardia → Slow vs fast heart rate
- Epidermis vs Dermis → Outer vs inner skin layer
- Endoskeleton vs Exoskeleton → Internal vs external skeleton

- Autolysis vs Heterolysis → Self-digestion vs digestion by others
- Anabolism vs Metabolism → Building vs total chemical reactions
- Abiotic vs Biotic → Non-living vs living
- Pathogen vs Parasite → Disease-causing agent vs organism living on host
- Unicellular vs Multicellular → One cell vs many cells

Exercise XI: Error Detection (Statement / Correction)

- Osteology studies bones, not muscles.
- Hyperthermia = high temperature.
- Nephrectomy = surgical removal of kidney.
- Hematology studies blood.
- Polymorphism = many forms.
- Endocrine = internal secretion.
- Eukaryote = true nucleus.
- Photosynthesis = production of glucose using light.

Exercise XII: Analyze the following clinical terms morphologically (For each term indicate: Prefix, Root, Suffix, Full meaning)

Term	Prefix	Root	Suffix	Meaning
Gastroenteritis	Gastro + Enter	-itis	Inflammation stomach & intestine	
Hypoglycemia	Hypo	Glyc	-emia	Low blood sugar
Hyperlipidemia	Hyper	Lipid	-emia	High blood lipids
Osteoarthritis	Osteo	Arthr	-itis	Joint inflammation
Cardiomyopathy	Cardio + Myo	- pathy	Heart muscle disease	
Encephalopathy	Encephalo	- pathy	Brain disease	
Cytotoxicity	Cyto	Toxic	-ity	Cell toxicity
Neoplasia	Neo	Plasia	—	New abnormal growth

Exercise XIII: Challenge - Create Your Own Term (Using the following elements, construct meaningful biological words):

- Hyperglycemia → high blood sugar
- Hypodermis → under the skin
- Autoimmune → self-immunity reaction
- Antibacterial → against bacteria
- Intercellular → between cells
- Polyneuropathy → disease of many nerves
- Monocyte → single nucleus cell
- Osteotomy → cutting bone
- Hepatolysis → destruction of liver cells
- Neurogenic → originating from nerves

