

Question Pattern for Entrance Examinations				
Subject: Biology for Biomedical Engineering				
Unit	Sub Unit	Course Content	No of Questions	Marks
A		Introduction to Biology	1	
	1	Nature and Scope of Biology	1	1
	2	Branch and Relation with Other Sciences		
B		Animal Tissues	1	
	1	Epithelial tissue	1	1
	2	Connective tissue		
	3	Muscular tissue		
	4	Nervous tissue		
C		Human Biology	12	
	1	Nutrition	1	1
	2	Digestive System	2	2
	3	Respiratory System	2	2
	4	Circulatory System	1	1
	5	Urinary System	1	1
	6	Reproductive System	2	2
	7	Nervous System	1	1
	8	Endocrine System	1	1
	9	Special Sense Organs	1	1
D		Cell Biology and Genetics	3	
	1	Biologically important molecules	2	2
	2	Prokaryotic & Eukaryotic cells		
	3	Cell divisions		
	4	Genetic Materials	1	1
E		Human Diseases	3	
	1	Communicable diseases	2	2
	2	Non-Communicable diseases		
	3	Antibiotics & Vaccines	1	1
Total			20	20

Syllabus

Unit: A Introduction to Biology

1. Nature and Scope of Biology
2. Branch and Relation with Other Sciences
3. Terminology used in biology

Unit: B Animal Tissues

1. Epithelial tissue
 - Types, distribution in the body, importance
2. Connective tissue
 - Types, distribution in the body, importance
3. Muscular tissue
 - Types, distribution in the body, importance
4. Nervous tissue
 - Types, distribution in the body, importance

Unit: C Human Biology

1. Nutrition
 - Micronutrients and deficiency disorders (Iron, Calcium, Sodium, Potassium, Magnesium, Zinc, Iodine)
 - Macronutrients (Fats, Proteins, Carbohydrates) and deficiency disorders
 - Balanced diet and its Necessity
 - Effects of various Nutritional Deficiencies and Imbalances
2. Digestive System
 - Name of digestive organs
 - Anatomy of mouth, oesophagus, stomach, intestine, rectum, anus
 - Physiology of digestion
3. Respiratory System
 - Name of respiratory organs
 - Anatomy of Trachea, Bronchi, Lungs
 - Physiology of Respiration
4. Cardiovascular System
 - Human heart
 - Blood pressure and blood vessels
 - Blood circulation
 - Blood group

5. Urinary System

- Organs in Urinary System
- Structure of human kidney and nephron
- Process of urine formation
- Function of kidney

6. Reproductive System

- Reproductive organs of male and female
- Structure and function of male and female sex organs
- Menstrual cycle in females
- Physiology of fertilization

7. Nervous System

- Different types of Nervous system
- Human Brain
- Process of nerve impulse conduction

8. Endocrine System

- Name of different endocrine glands
- Difference between endocrine and exocrine glands
- Pituitary gland
- Thyroid gland, associated disorders (Hypothyroidism, Hyperthyroidism)
- Parathyroid gland, associated disorders, role in maintaining level of calcium in blood)
- Pancreas, associated disorders (Diabetes Mellitus)
- Adrenal gland, different parts of adrenal gland, associated disorders

9. Special Sense Organs

- Different types of sense organs
- Location, structure and function of eye
- Common defects of eye: Myopia, Hypermetropia
- Location, structure and function of ear

Unit: D Cell Biology and Genetics

1. Biologically important molecules

- Carbohydrates, Proteins, Fats

2. Prokaryotic & Eukaryotic cells

- Cell organelles, examples of prokaryotic and eukaryotic cells

3. Cell divisions

- Mitosis, meiosis, phases of cell division

4. Genetic Materials

- DNA, RNA

Unit: E Human Diseases

1. Communicable diseases
 - Tuberculosis, Typhoid, AIDS, Ascariasis
2. Non-Communicable diseases
 - Cancer
3. Antibiotics & Vaccines
 - Penicillin
 - Names and types of vaccines for different diseases

Model Question

Choose the most appropriate answer:

1. Pathology is the study of:
 - a) Crops
 - b) Animals
 - c) Disease
 - d) Drugs

2. Pseudostratified epithelium is found in:
 - a) Skin
 - b) Upper respiratory passage
 - c) Urinary bladder
 - d) Ureter

3. Deficiency of Iron may result in:
 - a) Anemia
 - b) Conjunctivitis
 - c) Goitre
 - d) Tetanus

4. Human saliva contains enzymes to digest
 - a) Carbohydrate
 - b) Lipase
 - c) Protein
 - d) Both 'a' and 'b'

5. Hydrochloric acid is secreted by which part of digestive system?
 - a) Stomach
 - b) Mouth
 - c) Oesophagus
 - d) None of above

6. Oxygen is carried to tissues in the body by the help of:
- a) Albumin
 - b) Hemoglobin
 - c) Chlorine
 - d) All of above
7. The process of respiration consisting of inhalation of air into the lungs is called:
- a) Aerobic respiration
 - b) Inspiration
 - c) Expiration
 - d) Anaerobic respiration
8. Blood flows from the left ventricle into:
- a) Left Atrium
 - b) Aorta
 - c) Right ventricle
 - d) Pulmonary arteries
9. Urine flows from the urinary bladder into the:
- a) Urethra
 - b) Ureter
 - c) Uterus
 - d) Pelvis
10. Male gonads are:
- a) Ovaries
 - b) Penis
 - c) Testes
 - d) None of above
11. Normal female menstrual cycle lasts for _____ days
- a) 4-6 days
 - b) 10-15 days
 - c) 21-35 days
 - d) 40-50 days

12. The involuntary actions of the body are controlled by:
- a) Autonomic Nervous System
 - b) Central Nervous System
 - c) Peripheral Nervous System
 - d) None of above
13. Thyroxine is secreted by which gland?
- a) Parathyroid gland
 - b) Thyroid gland
 - c) Pancreas
 - d) Pituitary gland
14. Myopia is corrected by which type of lens?
- a) Convex lens
 - b) Concave lens
 - c) Only surgical correction
 - d) None of above
15. Crossing over occurs in which phase of meiotic cell division?
- a) Prophase
 - b) Metaphase
 - c) Anaphase
 - d) Telophase
16. Formation of ATP takes place in which cell organelle?
- a) Nucleus
 - b) Ribosome
 - c) Mitochondria
 - d) Lysosome
17. DNA consists of how many strands?
- a) 1
 - b) 2
 - c) 3
 - d) 4

18. Typhoid is transferred from one person to another by means of:

- a) Coughing
- b) Sneezing
- c) Contaminated water
- d) Talking

19. DOTS, the treatment for Tuberculosis stands for:

- a) Drugs of Tuberculosis
- b) Directly observed treatment short-course
- c) Direct and observed treatment system
- d) None of above

20. Penicillin was extracted from a:

- a) Fungus
- b) Bacteria
- c) Virus
- d) Protozoa

Answers:

Question	Answer
1	c
2	b
3	a
4	d
5	a
6	b
7	b
8	b
9	a
10	c
11	c
12	a
13	b
14	b
15	a
16	c
17	b
18	c
19	b
20	a

