

BIOLOGY (Revised Syllabus)**SECTION-A (Marks 17)****Time allowed: 25 Minutes**

NOTE: - Section-A is compulsory. All parts of this section are to be answered in the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

- Q.1 Circle the correct option i.e. A/B/C/D. Each part carries one mark.**
- (i) **Tidal volume is the air:**
 A. Remaining in the lungs after forced expiration
 B. Exchanged during normal breathing
 C. Inhaled after normal inspiration
 D. Forcibly expelled after normal inspiration
- (ii) **Fresh water fish excrete:**
 A. Ammonia B. Uric acid
 C. Urea D. All of these
- (iii) **Which of the following item gives its correct total number?**
 A. Thoracic vertebrae in humans - 11
 B. Floating ribs in humans - 4
 C. Metacarpals in humans - 8
 D. Facial bones in humans - 12
- (iv) **Which of the following is a naturally occurring compound which reduces the sensation of pain and generates the feeling of well-being?**
 A. Acetylcholine B. Dopamine
 C. Endorphins D. Epinephrine
- (v) **Skeletal muscles are controlled by:**
 A. Sympathetic nerve
 B. Parasympathetic nerve
 C. Somatic nerve
 D. Autonomic nerve
- (vi) **Deficiency of Adrenal cortex hormone results in:**
 A. Cushing's disease
 B. Graves' disease
 C. Addison's disease
 D. Cretinism
- (vii) **Ovulation in the human female normally takes place during the female reproductive cycles-**
 A. At the end of the proliferative phase
 B. At the beginning of the proliferative phase
 C. Just before the end of the secretory phase
 D. At the mid of the secretory phase
- (viii) **The blood vessels of the Allantois become:**
 A. Heart B. Umbilical Cord
 C. Placenta D. Retina
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- (ix) **Which Mendelian principle will not operate if two genes under study are close together?**
 A. Paired unit factors
 B. Dominance
 C. Segregation
 D. Independent Assortment
- (x) **Okazaki fragments are used to elongate:**
 A. The leading strand towards the replication fork
 B. The lagging strand towards the replication fork
 C. The leading strand away from the replication fork
 D. The lagging strand away from the replication fork
- (xi) **Acid rain is produced by:**
 A. Excess NO_2 and SO_2 from burning fossil fuels
 B. Excess production of NH_3 by industry and coal gas
 C. Excess release of carbon monoxide by incomplete combustion
 D. Excess formation of CO_2 by combustion and animal respiration
- (xii) **Lamarck theory of organic evolution is usually known as:**
 A. Natural selection
 B. Descent with change
 C. Inheritance of acquired characters
 D. Differential reproduction
- (xiii) **TAQ polymerase is used in PCR because of its:**
 A. Low thermal stability
 B. High fidelity
 C. High speed
 D. High thermal stability
- (xiv) **_____ Chromosomes have arms of equal length with the centromere in the middle.**
 A. Submetacentric B. Acrocentric
 C. Telocentric D. Metacentric
- (xv) **When an animal learns a response to a particular stimulus after many unsuccessful tries it is called:**
 A. Classical conditioning
 B. Instrumental learning
 C. Insight learning
 D. Latent learning
- (xvi) **Transgenic animals are those which are:**
 A. Foreign RNA in all its cells
 B. Foreign DNA in some of its cells
 C. Foreign DNA in all its cells
 D. Both A and B
- (xvii) **Vinegar is obtained from beer with the help of:**
 A. Rhizopus B. Acetobacter
 C. Yeast D. Clostridium

SECTION - B (Marks 42)

- Q.2 Answer any FOURTEEN parts. The answer to each part should not exceed 3 to 4 lines. (14×3=42)**
- (i) What is oxyhaemoglobin? How is it formed?
- (ii) How does negative feedback operate to control body temperature?
- (iii) Define Fracture. Differentiate between its common types.
- (iv) Draw a diagram of Sarcomere and label its parts.
- (v) In chemical terms, how the neuronal repolarization is achieved.
- (vi) Describe the mode of action of Narcotics and their effects on human nervous system. Also give examples.
- (vii) Write down the functions of the following
 a. Chemoreceptors
 b. Juxtamedullary Nephrons
 c. Hormone
- (viii) How is the blood calcium level regulated by calcitonin and Parathormone?
- (ix) FSH and LH get their names from events of the female reproductive cycle but they also function in males. How are their functions in females and males similar?
- (x) Define the following terms. Enlist their causes and effects.
 a. Acromegaly b. Cramp
- (xi) What is the process of induction as it relates to vertebrate development? What is the difference between Primary and Secondary Induction?
- (xii) Differentiate between Dominance and Epistasis
- (xiii) How do Endocrine disrupting contaminants affect the reproductive abilities of humans?
- (xiv)
- a. What is the function of acetylcholinesterase?
 b. Why is it necessary?
 c. What is the result of interfering with the function of this enzyme?
- (xv) Write three main steps involved in Polypeptide Elongation in translation process of protein synthesis.
- (xvi) Enlist the major differences between Divergent evolution and Convergent evolution.
- (xvii) What is instinct? Also give its examples.
- (xviii) Highlight the role of Microbes in Biological Nitrogen Fixation.
- (xix) Outline the steps of DNA sequencing technique.

SECTION-C (Marks 26)**Note: Attempt any TWO questions. All questions carry equal marks. (2×13=26)**

- Q.3**
- a. Describe various osmoregulatory adaptations of freshwater and marine animals. (06)
- b. How are synovial joints classified? (07)
- Q.4**
- a. Discuss neurosecretory role of Hypothalamus. (06)
- b. Describe the structure and function of Placenta in humans. (05)
- c. How is blood group distinguished as positive or negative blood group? (02)
- Q.5**
- a. Describe LAC Operon Model as positive regulation of gene expression. (07)
- b. How is Gene therapy carried out? (03)
- c. Write down causes and symptoms of Alzheimers disease (03)