



123202012301

MM-13* (MC-1-2036)
BIOLOGY (Part-II)

Total Time: 3:00 Hours
Total Marks: 85

Note: There are three sections in this paper i.e. A, B & C.

V T T C

Time Allowed: 20 Minutes

"Section-A"

Marks: 10

Q1. Choose the correct option i.e. A, B, C, or D.

- The compound formed when carbon dioxide combines with the globin part of hemoglobin is:
 - Oxyhemoglobin
 - Carbonic acid
 - Hemoglobinic acid
 - None of these
- The adult forms of many insects die at the end of each summer and the species survive:
 - Larvae only
 - Eggs only
 - Adult hibernates
 - Eggs or pupae
- The anterior end of the neural tube develops into:
 - Brain
 - Spinal cord
 - Neural crest
 - Sympathetic ganglia
- The threshold potential is typically around:
 - 35mV
 - 70mV
 - 0 mV
 - 80mV
- A young man is diagnosed with gonorrhea but has a documented allergy to penicillin. According to treatment guidelines, an acceptable alternative regimen includes:
 - Oral penicillin V & probenecid
 - Oral Ceftriaxone or injectable gentamicin & oral erythromycin
 - Intramuscular ceftriaxone
 - Doxycycline monotherapy
- Skeletal muscles are primarily involved in locomotory actions:
 - Body temperature
 - Blood pressure
 - Heart rate
 - Conventional Radiography
- A neurosurgeon needs to visualize the precise location of an aneurysm. The imaging modality that provides the best soft tissue contrast without exposing the patient to radiation is:
 - CT Scan
 - MRI
 - Conventional Radiography
 - Quarter
- A normal pregnancy lasting nine months is divided into:
 - Phase
 - Stage
 - Trimester
 - Quarter
- The risk of organ rejection was very high before the discovery of:
 - Cyclosporine
 - Penicillin
 - Heparin
 - Insulin
- During inspiration, the contraction of the diaphragm causes the rib cage to move:
 - Downward & inward
 - Upward & outward
 - Backward & downward
 - Inward & upward
- One of the key applications of DNA fingerprinting is:
 - Determine paternity or maternity
 - Identify individuals
 - Synthesize antibiotics
 - Clone whole organisms
- Conventional sources of energy are:
 - Renewable resources
 - Non-renewable resources
 - Exhaustible resources
 - Non-exhaustible resources
- The expansion of blood group antigens begins:
 - At birth
 - During embryonic stage
 - In adulthood
 - In old age
- According to Darwin, the process of natural selection is:
 - Artificial
 - Natural
 - Use & disuse
 - Inheritance of acquired traits
- In a cross of two homozygous plants (PPpp), the probability that an offspring will be heterozygous (Pp) is:
 - 1/2
 - 3/4
 - 1
 - 0
- Mice become albino in transgenic research primarily because of their:
 - Resistance to all diseases
 - Ability to produce human proteins naturally
 - Resistance to all diseases
 - Ability to produce human proteins naturally
- Mutations that occur in an egg cell are called:
 - De novo mutations
 - Somatic mutations
 - Induced mutations
 - Spontaneous mutations
- DNA polymerase I has a 5' to 3' activity:
 - A helicase
 - An endonuclease
 - An exonuclease
 - A ligase



Total Time: 2:40 mins
Total Marks: 67

EXM-12th (BIO-1-2026)
BIOLOGY (Part-II)

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"Section-B"

Marks: 40

Q.2. Write short answers of any TEN (10) of the following parts. All parts carry equal marks.

- (i) Define pneumonia. Briefly describe any two of its causes and state four of its symptoms.
- (ii) Define podocytes, ultrafiltration and glomerular filtrate. Name the two structures that cross to enter the tubules.
- (iii) What does the term fracture refer to? Enumerate three types of bone fractures. Differentiate between closed reduction and open reduction as a treatment strategy of bone fracture.
- (iv) Define Alzheimer's disease. List any six signs and symptoms.
- (v) Name the cells that secrete insulin and glucagon. Compare their functions.
- (vi) What is a dominant hierarchy? How is the "pecking order" established in a group of animals? Describe the process.
- (vii) Describe ovaries and oviducts as parts of female reproductive system.
- (viii) What is haemophilia and why is it a serious disease in males? Why is haemophilia extremely rare in females?
- (ix) Compare any four aspects of Klinefelter's syndrome.
- (x) Differentiate between homology and analogy.
- (xi) How is ozone (O_3) created in the stratosphere? Why is it harmful and poisonous to animals and plants in the lower atmosphere, how is it beneficial in the stratosphere?
- (xii) Define biotechnology. List any four areas of application. How can a biotechnologist can have opportunities to find career?
- (xiii) Differentiate between active and passive immunity. Give an example of each.

"Section-C"

Marks: 27

Answer any THREE questions. Each question carries equal marks.

- Q.3. (a)- Explain the structure and function of nephron and alveoli by highlighting at least five characteristics of each. (05)
- (b)- Differentiate between osmoregulation in fresh water animals and terrestrial animals. (04)
- Q.4. (a)- Explain the structure and function of human limbs. (05)
- (b)- Explain the process of learning. Give an example. (04)
- Q.5. (a)- Draw a flowchart or diagram showing the main divisions of the human nervous system. (05)
- (b)- List any four physiological level changes that occur in aging. State four effects of decreased metabolism as a result of aging. (04)
- Q.6. (a)- Define PCR. List four components and four applications of PCR. (05)
- (b)- Compare chromosomal determination of sex between drosophila and human. (04)

