

BIOLOGY Part-II
HSSC-12th-Swat-2026

Time: 20 Minutes Marks: 18

Multiple Choice Questions
01 Mark for each

Paper Code

Roll No. of the Student

Serial No. Of the Answer Book

SECTION-A

Note:

- 1) Attempting all MCQs is compulsory. This paper along with the OMR sheet must be returned to the superintendent after due time.
- 2) Fill the circle (A) (B) (C) (D), which one is correct with blue or black ball point in separate OMR Sheet like ●
- 3) If more than one circle in the OMR sheet is filled then no credit will be given to such answer.

- I.i. The rapidly dividing ball of cells that reaches the uterus and separates into inner and outer groups is called:
 - (A) Zygote
 - (B) Morula
 - (C) Blastocyst
 - (D) Embryo
- ii. The ABO blood group gene is located on:
 - (A) Chromosome 1
 - (B) Chromosome 9
 - (C) Chromosome 17
 - (D) Chromosome 21
- iii. The law of dominance states that different characters are controlled by factors occurring in pairs. In such pairs:
 - (A) Both factors express equally
 - (B) Both factors blend together
 - (C) Neither factor expresses
 - (D) One factor dominates the other
- iv. The enzyme responsible for adding nucleotides to the growing DNA strand during replication is:
 - (A) DNA polymerase III
 - (B) DNA polymerase I
 - (C) DNA ligase
 - (D) Primase
- v. An example of a chemical mutagen that can induce polyploidy in cells is:
 - (A) X rays
 - (B) Ultra violet radiation
 - (C) Colchicine
 - (D) Gamma rays
- vi. The two processes involved in the evolution of eukaryotes from prokaryotes are endosymbiosis and:
 - (A) Binary fission
 - (B) Membrane infolding
 - (C) Natural selection
 - (D) Speciation
- vii. The primary cause of natural resource depletion is:
 - (A) Natural disasters
 - (B) Climate change
 - (C) Human activities
 - (D) Wild life extinction
- viii. The technique that uses restriction enzymes to produce different sized DNA fragments for analysis is called:
 - (A) PCR
 - (B) Southern blotting
 - (C) Autoradiography
 - (D) RFLP
- ix. The protein produced by transgenic bacteria that is used by heart patients to dissolve clotted blood masses is:
 - (A) Insulin
 - (B) Interferon
 - (C) Tissue plasminogen activator (tPA)
 - (D) Human growth hormone
- x. The primary respiratory center that controls inspiration is located in:
 - (A) Cerebrum
 - (B) Pons
 - (C) Medulla oblongata
 - (D) Hypothalamus
- xi. Most of the oxygen transported from the lungs to the tissues is carried by:
 - (A) Plasma
 - (B) Platelets
 - (C) Haemoglobin
 - (D) White blood cells
- xii. The replacement of a diseased, damaged or missing kidney with a donor kidney is termed as:
 - (A) Dialysis
 - (B) Renal transplant
 - (C) Nephrectomy
 - (D) Immunosuppression
- xiii. The specialized tissue of mesodermal origin that makes up nearly half the human body mass is:
 - (A) Muscle tissue
 - (B) Epithelial tissue
 - (C) Nervous tissue
 - (D) Connective tissue
- xiv. The chemicals released by neurons into the synaptic cleft to transmit an action potential from one neuron to another are called:
 - (A) Ions
 - (B) Neurotransmitters
 - (C) Carbohydrates
 - (D) Enzymes
- xv. A patient with a suspected brain tumor needs an imaging technique that provides detailed three dimensional soft tissue contrast without using ionizing radiation. The most appropriate choice is:
 - (A) CT scan
 - (B) EEG
 - (C) MRI
 - (D) Standard Xray
- xvi. The term used to describe repeated sequences of events that occur at approximately 24 hour intervals is:
 - (A) Tidal rhythm
 - (B) Lunar rhythm
 - (C) Seasonal rhythm
 - (D) Circadian rhythm
- xvii. A 22-year-old male presents with urethritis, painful urination and purulent discharge from the penis. A Gram stain shows Gram negative diplococci (*Neisseria gonorrhoeae*). The most appropriate first line treatment regimen is:
 - (A) Oral Penicillin alone
 - (B) Ceftriaxone injection with oral azithromycin
 - (C) Oral azithromycin alone
 - (D) Injectable gentamicin alone
- xviii. The process by which the two layered embryonic disc transforms into three primary germ layers is called:
 - (A) Gastrulation
 - (B) Neurulation
 - (C) Organogenesis
 - (D) Implantation

BIOLGY Part-II

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Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B"

Marks: 40

II. Attempt any Ten Parts out of the following. Each Part carries equal marks.

- i. Describe sinuses in humans. Distinguish acute sinusitis from chronic sinusitis. List any four symptoms of acute sinusitis in humans.
- ii. Define nephron and state its significance in the kidney. List main components of a nephron in the order in which filtrate passes through them.
- iii. Give an outline of intervertebral disc. Describe the formation of a slipped disc (herniated disc) from a healthy disc and state the most common location for this condition.
- iv. What are neurological disorders? How can these disorders be classified? List any four types of neurological disorders.
- v. State the location, color, size and weight of pituitary gland in humans. Draw a table to show hormones of anterior lobe of pituitary gland along with their functions.
- vi. Define social behavior and state its significance. List four examples of highly social organisms.
- vii. Describe the internal structure of human testes and state their location.
- viii. Differentiate between an X-linked trait and a Y-linked trait. Explain why an X-linked trait passes in a "crisscross" pattern from maternal grandfather to grandson.
- ix. Describe Klinefelter's syndrome. List any four symptoms of the syndrome.
- x. Define homologous structures. What conclusion is drawn from the study of homologous structures and how does this support the theory of evolution?
- xi. Define nuclear energy. How is nuclear energy released? Why is nuclear power considered an alternative to fossil fuel power plants?
- xii. Define biotechnology and bio chips. Analyze the scope of biotechnology in computer science.
- xiii. Give an outline of inactivated vaccines. Why do inactivated vaccines usually require booster shots and what diseases do they protect against?

SECTION "C"

Marks: 27

Note: Attempt any Three questions of the following. Each question carries equal Marks.

- III.
 - a) Describe the external structure of human nose. List the internal structural components of the nasal cavity and their functions that help in air conditioning. 5
 - b) Differentiate between osmoregulators and osmoconformers. 4
- IV.
 - a) Define human skull and name the type of joint present among skull bones. Describe facial bones of humans. 5
 - b) Define learning and habituation. State one characteristic of habituated animals. Why does a newborn baby first learn through its mother's reactions? 4
- V.
 - a) What is CNS and PNS? Illustrate protection of brain and spinal cord by describing skeleton and meninges. 5
 - b) Describe rubella and neural tube defects as disorders during embryonic development. 4
- VI.
 - a) Define PCR. Describe dNTPs and Taq polymerase as components of PCR. 5
 - b) Describe XO-XX pattern of sex determination. Give examples of organisms in which it occurs. 4