Paper Code: ①

ESKPXII-XXVI (I)
BIOLOGY PART-II

Time Allowed: 3 Hrs **Marks: 85**

Note: There are **Three Sections** in this paper i.e. A, B and C. Attempt Section-A and return it to the Superintendent within the given time. No marks will be awarded for **Cutting, Erasing and Overwriting.**

Mobile Phone is strictly prohibited in Examination Hall.

Time: 20 Minutes **SECTION "A"** **Marks: 18**

Q.1. Choose the correct option and shade one of (A, B, C, D) in the given **Bubble Answer Sheet.**

i. The structure that assumes a dome-shaped position during the relaxation phase of breathing is:

Ⓐ Sternum Ⓑ Rib cage Ⓒ Diaphragm Ⓓ Pleural membrane

ii. Highly active tissues such as muscle cause more oxygen to dissociate from haemoglobin primarily because of the:

Ⓐ Higher partial pressure of oxygen in tissues Ⓑ Lower partial pressure of oxygen in tissues Ⓒ Increased carbon dioxide in the lungs Ⓓ Decreased metabolic rate

iii. The risk of organ rejection was very high before the discovery of:

Ⓐ Penicillin Ⓑ Cyclosporine Ⓒ Heparin Ⓓ Insulin

iv. The most distinguishing functional characteristic of muscles is their ability to transform chemical energy (ATP) into:

Ⓐ Mechanical energy Ⓑ Electrical energy Ⓒ Thermal energy Ⓓ Radiant energy

v. The minimum voltage required to trigger an action potential is known as:

Ⓐ Resting potential Ⓑ Threshold potential Ⓒ Action potential Ⓓ Refractory potential

vi. A researcher studying the distribution of water molecules in different regions of the brain to assess edema would most likely use:

Ⓐ EEG Ⓑ CT scan without contrast Ⓒ MRI Ⓓ Skull X-ray

vii. Biological rhythms that enable organisms to synchronize their activities with regularly recurring changes in external conditions are regulated by intrinsic:

Ⓐ Genetic codes Ⓑ Nervous reflexes Ⓒ Hormonal surges Ⓓ Biological clocks

viii. A 30-year old woman having a painless genital ulcer that appeared three weeks after unprotected sexual contact. The ulcer healed spontaneously after six weeks, but she now develops a generalized rash and low-grade fever. The most likely causative organism is:

Ⓐ Treponema pallidum Ⓑ Neisseria gonorrhoeae Ⓒ Human Immunodeficiency Virus Ⓓ Chlamydia trachomatis

ix. The first major event of organogenesis, during which the brain and spinal cord begin to form, is called:

Ⓐ Gastrulation Ⓑ Cleavage Ⓒ Implantation Ⓓ Neurulation

x. Vitamin K is recommended in the third trimester primarily because it:

Ⓐ Helps the placenta develop Ⓑ Releases energy from food Ⓒ Is essential for blood clotting after childbirth Ⓓ Prevents neural tube defects

xi. An Rh negative individual naturally has:

Ⓐ Rh antigen present on red blood cells Ⓑ Anti-Rh antibodies present in the plasma Ⓒ Only genotype DD Ⓓ No antibodies against Rh factor

xii. In a cross between two pea plants heterozygous for flower color (Pp x Pp), the probability that an offspring will be homozygous recessive (pp) is:

Ⓐ 1/2 Ⓑ 1/4 Ⓒ 3/4 Ⓓ 1

xiii. In eukaryotes, the length of Okazaki fragments is approximately:

Ⓐ 10 to 20 nucleotides Ⓑ 100 to 200 nucleotides Ⓒ 1000 to 2000 nucleotides Ⓓ 5000 to 10000 nucleotides

xiv. Mutations that occur naturally and automatically due to internal factors are termed as:

Ⓐ Spontaneous mutations Ⓑ Induced mutations Ⓒ Somatic mutations Ⓓ Chromosomal aberrations

xv. The term "survival of the fittest," used to describe natural selection, was coined by:

Ⓐ Charles Darwin Ⓑ Thomas Malthus Ⓒ Alfred Wallace Ⓓ Herbert Spencer

xvi. The average flow of solar energy per square kilometer on the surface of the earth is approximately:

Ⓐ 18,000 kilowatts Ⓑ 180,000 kilowatts Ⓒ 1,800,000 kilowatts Ⓓ 18,000,000 kilowatts

xvii. The technique used to visualize the pattern of hybridization on X-ray film after probe hybridization is called:

Ⓐ Electrophoresis Ⓑ Restriction digestion Ⓒ Polymerase chain reaction Ⓓ Autoradiography

xviii. Transgenic bacteria are used to treat dwarfism for making:

Ⓐ Clotting factors Ⓑ Insulin Ⓒ Growth hormones Ⓓ tPA (tissue plasminogen activator)