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Answer Sheet No. \_\_\_\_\_

Sign. of Candidate \_\_\_\_\_

Sign. of Invigilator \_\_\_\_\_

Section - A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

**BIOLOGY HSSC-II**  
**SECTION - A (Marks 17)**  
**Time allowed: 25 Minutes**

حصہ اول لازمی ہے۔ اس کے جوابات اسی صفحہ پر دے کر ناظم مرکز کے حوالے کریں۔ گات کردہ بارہ لکھنے کی اجازت نہیں ہے۔ لیڈ پنسل کا استعمال ممنوع ہے۔

Fill the relevant bubble against each question:

ہر سوال کے سامنے دیے گئے درست دائرہ کو پر کریں۔

- A man has hemophilia. Which statement correctly describes the inheritance of this gene?
  - He inherited the recessive allele from his mother.
  - He inherited the dominant allele from his father.
  - He can pass the recessive allele to a son.
  - He can pass the dominant allele to a daughter.
- When a frog flips out its tongue to catch an insect flying past, it is showing which type of behavior?
  - Learned behavior
  - Territoriality
  - Courtship behavior
  - Innate behavior
- When the pituitary gland releases human growth hormone GH, what is the effect on the liver?
  - Stimulates the pituitary gland to release GH
  - Stimulates the liver to convert glycogen into glucose
  - Stimulates the liver to store glucose
  - Decreases sugar level in blood
- Which of the following would increase the rate of heat exchange between an animal and its environment?
  - Feather or Fur
  - Vasoconstriction
  - Wind blowing across the body surface
  - Counter current heat exchange
- Homeostasis of blood osmotic pressure is maintained by which organ(s)?
  - Lungs
  - Kidneys
  - Heart
  - Liver
- Emphysema is a condition that results in the destruction of alveoli in the lungs? What effect would this have on the body?
  - Lower levels of oxygen in the blood
  - Higher levels of oxygen in the blood
  - Lower levels of carbon dioxide in the blood
  - No effect
- Immediate source of energy for muscle contraction is:
  - Glucose
  - GTP
  - ATP
  - Creatine phosphate
- Reflex action below the neck are under control of:
  - Brain
  - Spinal cord
  - Hypothalamus
  - Pituitary
- Glands of male reproductive system in human are:
  - Prostate, Seminal vesicles
  - Prostate, Corpus luteum
  - Prostate, Placenta
  - Corpus luteum, Seminal vesicles
- A structure which is made up of both foetus and maternal tissue is known as:
  - Placenta
  - Umbilical cord
  - Amnion
  - Allantois

11. Which one is a sex-limited trait?  Beard growth  Baldness  Haemophilia  tfm

12. Production of more individuals than environment can lead to:  Struggle for existence  Survival of fittest  Natural selection  Evolution

13. Which of the following is environmental buffer?  Wild life  Lichens  Herbs  Forests

14. A genome is a full set of genes in an:  Individual  Population  Community  Biosphere

15. Study of proper utilization of economically important domesticated animal is known as:  Animal Husbandry  Wild life management  Hybrid breeding  Livestock management

16. Seminiferous tubule grows into:  Epididymis  Vas deference  Urinary bladder  Urethra

17. The change of behavior by life experiences is called:  Instinct  Maturation  Learning  Imprinting

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# BIOLOGY HSSC-II

30

Time allowed: 2:35 Hours

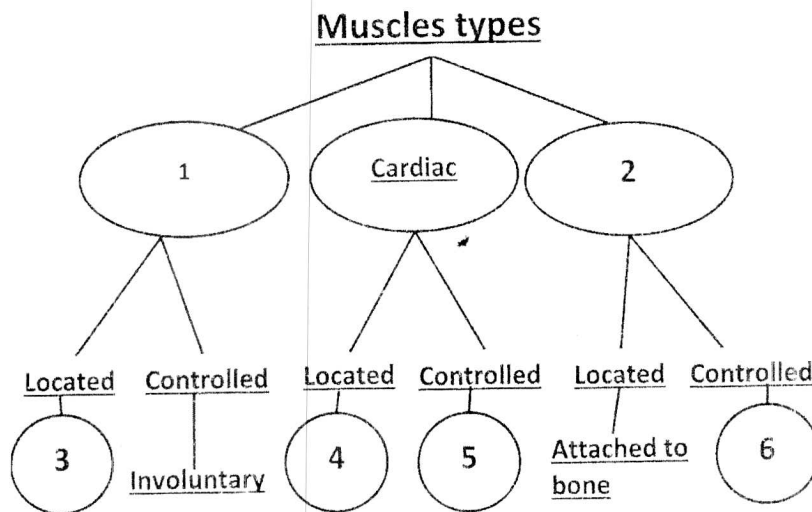
Total Marks Sections B and C: 68

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C'. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly. Statistical table will be provided on demand.

## SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. All parts carry equal marks. (14 x 3 = 42)

- (i) If an injury tore a small hole in the membrane surrounding lungs? What effect on lungs function is expected?
- (ii) If blood pressure in the afferent arteriole leading to glomerulus decreased, how would the rate of blood filtration within Bowman's capsule be affected? Explain briefly.
- (iii) Complete the concept map to compare different types of muscles. (Label 1 – 6)



- (iv) Describe the basic pathway of information flow through neurons that causes one to turn one's head when someone calls their name.
- (v) Critically analyze the inheritance of hemophilia, colorblindness and muscular dystrophy.
- (vi) What is corpus luteum? Briefly explain its role in menstrual cycle.
- (vii) List some changes that occur at cellular level during aging.
- (viii) Why the length of mRNA formed in Eukaryotes shortens when it goes to cytoplasm for translation? How its message is protected?
- (ix) How atmospheric nitrogen is fixed to be utilized by plants?
- (x) What is succession? How might the early species help the arrival of late species?
- (xi) What is the basic principle of Gel Electrophoresis? Write down its two applications.
- (xii) Write down three main steps involved in any DNA sequencing method.
- (xiii) How are microbes utilized for energy production?
- (xiv) Explain XO – XX type of sex determination with the help of an example.
- (xv) List the hormones of anterior pituitary gland.
- (xvi) What is a vaccine? Give its importance.
- (xvii) Write three main causes of male infertility in humans.
- (xviii) Name the three germ layers. Which body organs are derived from these germ layers?
- (xix) Draw and label the water cycle.
- (xx) Describe the structure and function of voice box in humans.

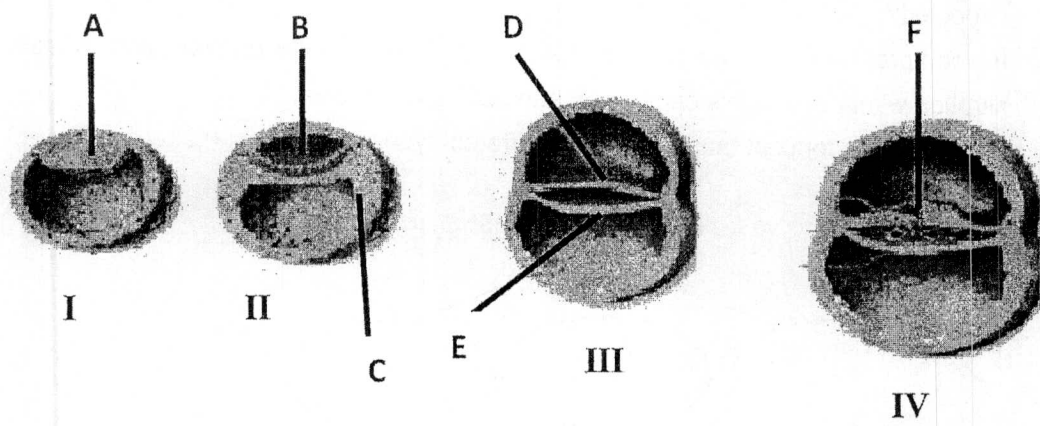
**SECTION – C (Marks 26)**

**Note:** Attempt any TWO questions. All questions carry equal marks.

**( 2 x 13 = 26 )**

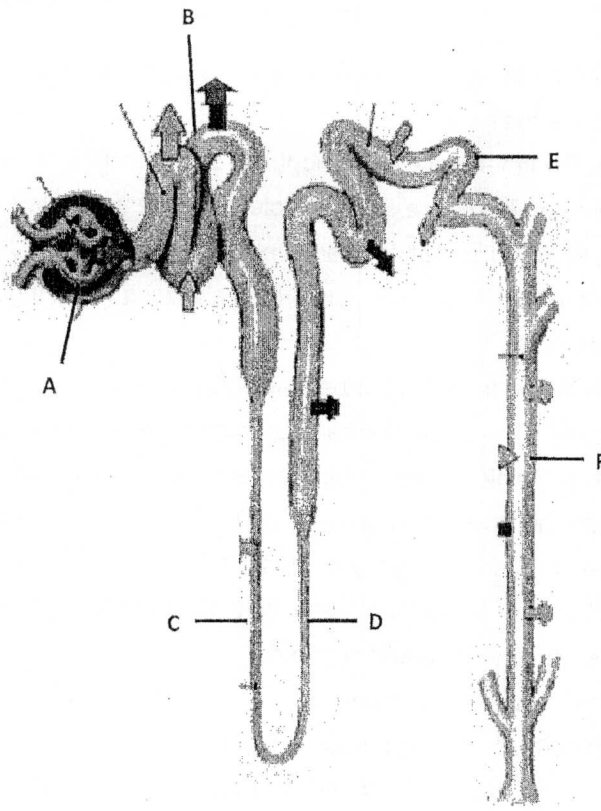
- Q. 3** a. How a piece of DNA is amplified through PCR? Explain the process in detail. (07)  
 b. Describe techniques for the improvement of yield in crops and fruits. (06)

- Q. 4** a. Below is the figure showing gastrulation in humans. Identify the labelled parts A – F. What role does gastrulation play in the specialization of cell types common to most multicellular animals? (04)



- b. How the process of gastrulation takes place in humans? (05)  
 c. Why are there so many variations of grain color in wheat? Explain. (04)

- Q. 5** a. Explain the process of repair of simple fracture of bone. (04)  
 b. Below is the figure of nephron.



- (i) Identify the labelled parts A – F. (03)  
 (ii) Explain the process of urine formation. (06)