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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۔ کٹ کر دوبارہ لکھنے کی اجازت نہیں ہے۔ ایڈمنسٹریٹو استعمال ممنوع ہے۔

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

Fill the relevant bubble against each question:

- Which tRNA can bind at mRNA Condon UAC? tRNA with anticodon ACU tRNA with anticodon AUG tRNA with anticodon TGA tRNA with anticodon TCU
- If a man of M blood group marries a woman of N blood group, all their children will have: M blood group N blood group O blood group MN blood group
- Which of the following structures produce the fluid protein of semen? Seminal vesicles, Bulbourethral gland, Prostrate gland Seminal vesicles, Bulbourethral gland, Bladder Seminal vesicles, Urethra, Bladder Testes, Bulbourethral gland, Bladder
- What does the cat show when it runs for its food dish upon hearing the food can opener? Insight learning Conditioning Habituation Imprinting
- What type of heat exchange is promoted by vasodilation? Convection Conduction Evaporation Radiation
- All of the following contain cartilage EXCEPT: Larynx Bronchi Trachea Bronchioles
- A trait whose alleles are present in both male and female but expresses more in one sex than other: Sex linked trait Sex influenced trait Sex limited trait Y linked trait
- Organism of same species inhabiting in space and time form a: Population Species Community Biosphere
- The present giraffe has a long neck as compared to its ancestors. Lamarck believed it could be due to: Natural selection Inheritance of acquired characters Isolation Speciation
- Crumpled leaves like structure are found in _____ stage of xerarch succession. Crustose lichen Foliose-lichen Moss Herbaceous

11. Myoglobin occurs in: Blood Liver Spleen Muscles
-
12. $Na^+ - K^+$ ATPase pump is important for: Maintenance of Resting membrane potential Massive out flux of K^+ after depolarization Recovery of resting potential Conversion of resting potential into action potential
-
13. Ovulation is stimulated by the sharp increase of which of the following hormones? FSH Estrogen LH Progesterone
-
14. Specific sequences four or six nucleotides arranged symmetrically in reverse order where restriction enzyme works are known as: Okazaki Fragment Palindromic Sequences Promotor Sequences Primer
-
15. During PCR which enzyme is used to do polymerization of DNA fragments? RNA polymerase DNA polymerase Taq polymerase DNA ligase
-
16. The pancreas releases which of the following hormones? Epinephrine and Nor epinephrine GH and ADH Thyroxin and calcitonin Glucagon and insulin
-
17. Which of the following cells are involved in soft callus formations during repair of bones? Osteoblast Osteoclast Osteocytes Chondrocytes

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BIOLOGY HSSC-II

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Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

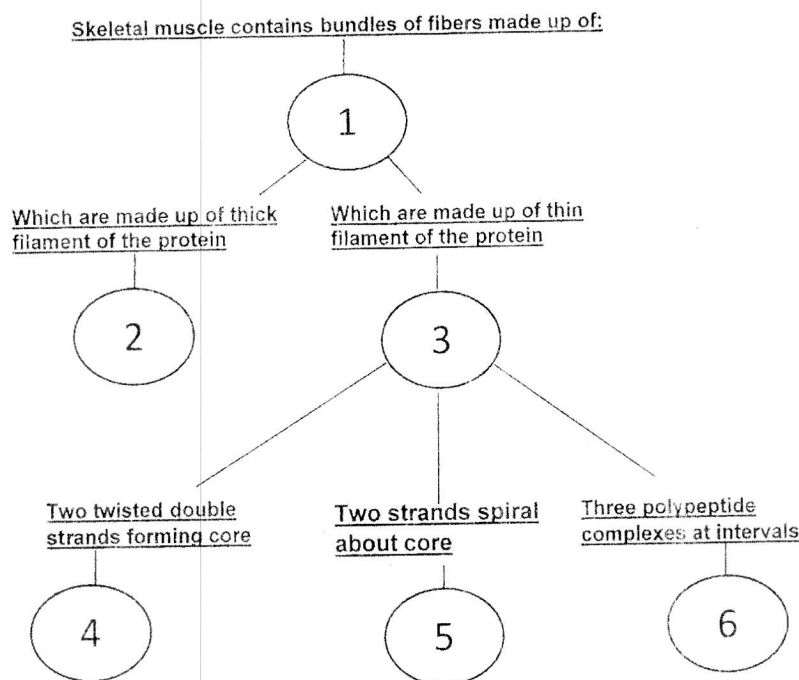
NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C'. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly. Statistical table will be provided on demand.

SECTION - B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. All parts carry equal marks.

(14 x 3 = 42)

- (i) What advantage does uric acid offer as a nitrogenous waste in arid environment?
- (ii) Why is an internal location of gas exchange tissue advantageous for terrestrial animals? List properties of respiratory surfaces.
- (iii) Complete the concept map using the following terms: Actin, Myofibril, Myosin, Troponin, Tropomyosin, F. Actin (label 1 – 6)



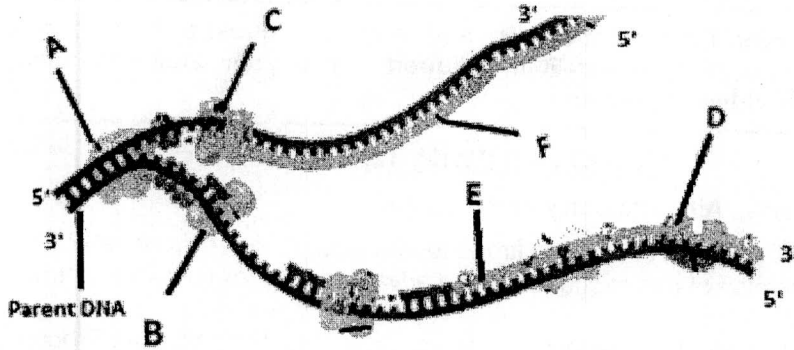
- (iv) Why is it nearly impossible to stop a reflex action from taking place? Write down the fundamental parts of a typical reflex arc.
- (v) What are the phenotypes and genotypes of parents of a colorblind son and non-carrier daughter?
- (vi) What is miscarriage? What are the possible causes of miscarriage?
- (vii) Which types of cells have been proposed as fourth germ layer? What structures are derived from it?
- (viii) Differentiate between:
 - a. Intron and exon
 - b. Heterochromatin and Euchromatin
 - c. Nucleosome and Primosome
- (ix) Explain genetic drift. Write down its two causes.
- (x) If a forest near a lake is cut down, how will the quality of water be damaged? Also list non-conventional energy sources.
- (xi) What is cystic fibrosis? How gene therapy is used to cure it?
- (xii) What is meant by tissue culture? Write about two techniques used for animal cell culture.
- (xiii) Explain integrated disease management.
- (xiv) Why is human male referred as heterogametic? Explain with the help of a cross.
- (xv) What are hormones? Give their classification on the basis of chemical nature.
- (xvi) What are biological rhythms? How are they important to man?
- (xvii) Write three causes of infertility in human females.
- (xviii) What is cleavage? Write about two patterns of cleavage.
- (xix) What is ecological Pyramid? Explain any two types.
- (xx) Write any three roles of microbes in human welfare.

SECTION – C (Marks 26)

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

(2 x 13 = 26)

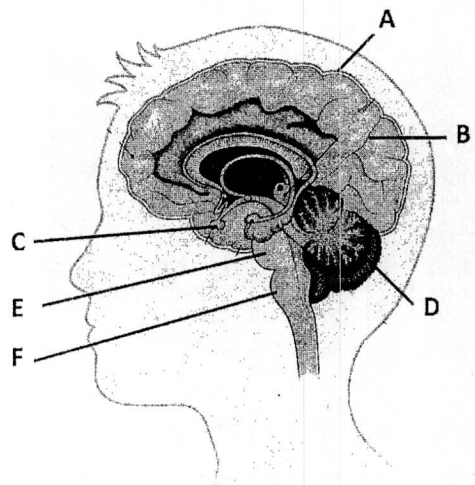
Q. 3 a. The given figure shows the process of DNA replication:



- (i) Identify the parts labeled as A, B, C, D, E, F. (03)
 - (ii) Write down the functions of A, B, C, D. (04)
 - (iii) DNA stability and variability are maintained during replication. Explain (02)
- b.** Explain the concept of multiple alleles giving ABO blood group as an example. (04)

Q. 4 a. Given figure is the architect of Human brain.

- (i) Identify the parts labelled as A, B, C, D, E, F. (03)
- (ii) Write down the three main parts of brain. (1.5)
- (iii) Give the functions of parts labelled as D, E, F. (4.5)



b. Albinism (lack of Pigment) in man is caused by a recessive gene. If normal parents have an albino child, what is the probability that their next child be normal for color. (04)

Q. 5 a. How are joints classified on the basis of their mobility? Write about any one common disorders of Skelton. (07)

b. The given figure shows a setup of for electrophoresis.

- (i) What is the principle behind working of this apparatus? (04)
- (ii) Why is it needed in experiments in biotechnology? (02)

