

BOARD QUESTION PAPER : JULY 2017

BIOLOGY

Time: 3 Hours

Total Marks: 70

Note:

- i. All questions are compulsory.
- ii. Answers to Section-I and Section-II should be written in **Two Separate** answer books.
- iii. Questions from Section-I attempted in the answer book of Section-II and vice-versa will not be assessed / not be given any credit.
- iv. Draw neat and labelled diagrams wherever necessary.
- v. Figures to the right indicate full marks.
- vi. Answer to every new question must begin on a new page.

SECTION – I

[BOTANY]

Q.1. Select and write the most appropriate answer from the given alternatives for each sub-question:

[7]

- i. The biological scissors of DNA are _____.
(A) ligases (B) polymerases
(C) endonucleases (D) transcriptases
- ii. Vijaya, Padma, Kanti and Jayanti are high yielding varieties of _____.
(A) wheat (B) jowar
(C) sugarcane (D) rice
- iii. Mitochondria are regarded as semiautonomous organelles, due to the presence of _____.
(A) Cristae (B) RNA
(C) DNA (D) F₁ particles
- iv. Which of the following is mainly responsible for ozone depletion?
(A) CFCs (B) hydrocarbons
(C) carbon monoxide (D) carbon dioxide
- v. The process of formation of partially decomposed organic matter is called _____.
(A) fragmentation (B) leaching
(C) catabolism (D) humification
- vi. The number of adenine molecules in a given DNA segment is 25 and the number of cytosine molecules is 45, the total number of nucleotides in the segment is _____.
(A) 70 (B) 140
(C) 90 (D) 50
- vii. The microbial source of vinegar is _____.
(A) *Aspergillus niger* (B) *Rhizopus arrhizus*
(C) *Acetobacter aceti* (D) *Streptomyces venezuelae*

Q.2. (A) Answer in 'One' sentence only :

(6)[12]

- i. What is heterocyst?
- ii. What are plasmids?
- iii. Why chl-a (chlorophyll-a) is called essential pigment?
- iv. Define global warming.

- v. Give the meaning of Nif gene.
- vi. Name the aquatic fern commonly used in paddy field as a biofertilizer.

(B) Sketch and label the ultrastructure of chloroplast. (2)

(C) Attempt any TWO of the following: (4)

- i. Give the advantages of biogas.
- ii. Give the names of 'two' insect-resistant crop varieties.
- iii. Enlist the causes of deforestation.
- iv. Give the floral adaptations of entomophily.

Q.3. (A) Attempt any TWO of the following: (6)[9]

- i. Describe the Wobble hypothesis.
- ii. Describe the connecting link between glycolysis and Krebs' cycle.
- iii. Give the diagrammatic representation of ETS.

(B) Sketch and label lytic cycle. (3)

Q.4. What is Neo-Mendelian genetics? Describe quantitative inheritance controlled by two pairs of genes. [7]

OR

Enlist advantages and disadvantages of cross pollination. Add a note on pollination mechanism in *Salvia*.

SECTION – II

[ZOOLOGY]

Q.5. Select and write the most appropriate answer from the given alternatives for each sub-question: [7]

- i. Overproduction is the principle of _____.
 (A) Lamarckism (B) Theory of organic evolution
 (C) Panspermia theory (D) Modern theory of evolution
- ii. Myopia is an example of _____.
 (A) complete sex-linkage (B) incomplete sex-linkage
 (C) recombination (D) crossing over
- iii. _____ is the infectious stage of *Plasmodium*.
 (A) Trophozoite (B) Sporozoite
 (C) Cryptozoite (D) Metacercaria
- iv. Which of the following is a chemical transmitter in synapse of neurons?
 (A) cholesterol (B) A.T.P.
 (C) cholinesterase (D) acetylcholine
- v. The external layer of connective tissue sheath of human testis is _____.
 (A) tunica vasculosa (B) tunica vaginalis
 (C) tunica granulosa (D) tunica albuginea
- vi. Glucose is taken back from glomerular filtrate _____.
 (A) along with concentration gradient
 (B) against concentration gradient
 (C) by simple diffusion
 (D) by tubular secretion

vii. Pituitary dwarfism is treated with gene therapy by _____.

- (A) Human insulin
- (B) Tissue growth factor - Beta
- (C) Tissue plasminogen activator
- (D) Human growth hormone producer gene

Q.6. (A) Answer in 'One' sentence each:

(6)[12]

- i. Mention the first vaccine developed against any human disease.
- ii. Name the 'two' types of maps generated by H.G.P.
- iii. What is 'syndrome'?
- iv. Name the type of T-lymphocyte which secretes perforins.
- v. What is the full form of IVF?
- vi. What is protobiogenesis?

(B) Sketch and label the structure of Malpighian body.

(2)

(C) Attempt any TWO of the following:

(4)

- i. Give reason – '*Archaeopteryx*' is called connecting link between reptiles and birds'.
- ii. Summarise the process of vaccine production.
- iii. Write a short note on 'lac culture'.
- iv. With the help of a suitable example, explain the concept of 'commensalism'.

Q.7. (A) Attempt any TWO of the following:

(6)[9]

- i. Explain the types of chromosomes on the basis of position of centromere.
- ii. Give the symptoms of typhoid fever and draw a labelled diagram of its causal organism.
- iii. With the help of suitable diagrams, explain how the age structures determine the trend of population.

(B) Sketch and label T.S. of the thyroid gland.

(3)

Q.8. Describe the T.S. of human testis and explain the process of spermatogenesis.

[7]

OR

With the help of a suitable diagram, describe the conducting system of human heart.