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 genotype of human blood group B is __________.
(A) I^B i
(B) I^B i
(C) I^A I^A
(D) ii

ii. Breakdown of detritus into smaller particles is called __________.
(A) fragmentation
(B) leaching
(C) catabolism
(D) humification

iii. In Brassica (rapeseed, mustard) __________ variety is resistant to Aphids.
(A) Pusa A-4
(B) Pusa Gaurav
(C) Pusa Sawmi
(D) Pusa Shubra

iv. The antibiotic chloromycetin is obtained from __________.
(A) Sclerotiana libertine
(B) Aspergillus niger
(C) Streptomyces griseus
(D) Streptomyces venezuelae

v. The __________ enzyme is used to cut DNA at specific point.
(A) DNA polymerase
(B) Alkaline phosphatase
(C) restriction endonuclease
(D) DNA ligase

vi. R. Q. for proteins is about __________.
(A) 0.7
(B) 0.8
(C) 0.9
(D) 1.0

vii. Ozone depletion is occurring widely in the stratosphere, it leads to ozone hole caused mainly due to __________.
(A) ethylene
(B) methane
(C) CFCs
(D) CO_2

Q.2. (A) Answer each question in ‘One’ sentence only: [6][12]

i. Give an example of the source of thermostable enzyme DNA polymerase.

ii. Give an example of the non-edible or poisonous mushroom, studied by you.

iii. Name the secondary metabolites in Catharanthus roseus.

iv. What is meant by ecological succession?

v. Name the organism and enzyme which bring about alcoholic fermentation of sucrose.

vi. Enlist any ‘two’ floral adaptations in salvia.

(B) Give schematic representation of carbon cycle. [2]
(C) Answer the following (Any TWO):

i. What is a ‘test cross’? Explain significance of a test cross.
ii. Explain ‘Wobble hypothesis’ with the help of a suitable diagram.
iii. What is a ‘biopatent’? Explain it with a suitable example.
iv. Name the parts W, X, Y and Z from the following figure:

![Diagram with labeled parts W, X, Y, and Z]

Q.3. (A) Answer the following (Any TWO):

i. Explain replication of bacteriophage with the help of a suitable diagram.
ii. What are ‘biofertilizers’? Explain them with suitable examples.
iii. Differentiate between anemophily and entomophily.

(B) Sketch and label V.S. of mature anatropous ovule.


OR

What is ‘RNA’? Explain different types of non-genetic RNA with diagrams and functions.
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SECTION – II

[ZOOLOGY]

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

i. Which of the following has normal vision?
   (A) $X^c X^c$  (B) $X^c Y$
   (C) $X^C X^c$  (D) $X^c Y^c$

ii. In DNA fingerprinting technique, radioactive DNA probe is obtained from _______ of female banded krait snake.
   (A) X chromosome  (B) Y chromosome
   (C) X and Y chromosomes  (D) autosome

iii. Abortion in the first trimester of pregnancy may occur due to lack of _______.
   (A) aldosterone  (B) testosterone
   (C) oestrogen  (D) progesterone

iv. _______ contribute about 60% of the total volume of the semen.
   (A) Prostate glands  (B) Cowper’s glands
   (C) Seminal vesicles  (D) Bartholin’s glands

v. Lowering of blood pressure is related with the production of _______.
   (A) ADH  (B) ANF
   (C) GH  (D) LH

vi. Humulin is used to treat _______.
   (A) Diabetes mellitus  (B) Diabetes insipidus
   (C) Hepatitis  (D) Nephritis

vii. The modification of original genetic make-up is focussed by _______.
   (A) PCR  (B) DNA fingerprinting
   (C) Electrophoresis  (D) Gene therapy

Q.6. (A) Answer the following questions only in ‘one’ sentence each:

i. Which material is used for isolation of DNA in fingerprinting technique?
ii. Give significance of podocyte.
iii. What is ‘commensalism’?
iv. What is the function of acrosome?
v. Distinguish between X and Y chromosomes. (Mention any ‘two’ points.)
vi. Give any ‘two’ examples of endangered species.

(B) Sketch and label the ‘Structure of HIV’.
(C) **Attempt any TWO of the following:** (4)

i. Write a note on erythrocytes.
ii. What are the uses of vaccine?
iii. Describe the process of budding in *Hydra*.
iv. Name the species used in sericulture. Name the stages in the life cycle of a silk moth in cyclic form.

Q.7. (A) **Attempt any TWO of the following:** (6)

i. Explain ABO blood group system in human being with a suitable chart.
ii. Describe diagrammatic representation of age structure showing declining population.
iii. With the help of a neat and labelled diagram, describe reflex arc.

(B) Sketch and label ‘human male reproductive system’.


Describe the T.S. of thyroid gland and add a note on deficiency of thyroxine. [7]

**OR**

Define ‘evolution’. Give the principles of Darwin’s theory of natural selection. Mention any ‘one’ objection to it.