PART - III
BIOLOGY / حیاتیات
(Urdu & English Version / اردو اور انگریزی نسخہ)

Time Allowed : 2.30 Hours ] [ Maximum Marks : 70

Instructions:
(1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
(2) Use Blue or Black ink to write and underline and pencil to draw diagrams.

Note:
Candidate should answer Part-I (Bio-Botany) & Part-II (Bio-Zoology) in separate answer-books.

PART - I (BIO-BOTANY) / (حیاتیات - I)
(Marks : 35) / (مکس : 35)
(SECTION - I / I)

8x1=8

Note:
(i) Answer all the questions.
(ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.
1. In mature sieve elements, sometimes the pores in the sieve plate are blocked by a substance called:
   (a) lignin  (b) suberin  (c) callose  (d) callus

2. An antibiotic Bacitracin is obtained from:
   (a) Streptomyces aureofaciens  (b) Bacillus licheniformis  (c) Streptomyces griseus  (d) Bacillus subtilis

3. Match the following:
   (1) Camp and Gilly  (i) Phylogenetic system
   (2) Carolus Linnaeus  (ii) Biosystematics
   (3) Bentham and Hooker  (iii) Artificial system
   (4) Engler and Prantl  (iv) Natural system
   (a) (1) - (iv)  (2) - (ii)  (3) - (i)  (4) - (iii)
   (b) (1) - (i)  (2) - (iii)  (3) - (iv)  (4) - (ii)
   (c) (1) - (ii)  (2) - (iii)  (3) - (iv)  (4) - (i)
   (d) (1) - (iii)  (2) - (iv)  (3) - (ii)  (4) - (i)
Plant treated with gibberellin shows sudden elongation of stem followed by flowering is called:
(a) Richmond Lang Effect  (b) Bud dormancy  
(c) Foolish seedling  (d) Bolting

The biochemical mutants of _______ failed to synthesize certain amino acids.
(a) Aspergillus  (b) Neurospora  
(c) Oenothera  (d) Penicillium

In Hevea brasiliensis, the leaves are:
(a) Sessile  (b) Palmately lobed  
(c) Simple  (d) Trifoliately compound

The amino acid serine is formed in _______ during C₂ cycle.
(a) peroxisome  (b) mesophyll  
(c) chloroplast  (d) mitochondria
The bacteria that is used in SCP production is:
(a) Bacillus sps.  (b) Alkaligenes  (c) E-coli  (d) Streptomyces

Answer any four questions.

What is hardening?

Define - Photorespiration.

What do you mean by recurrent parent?

Write down the formula for measuring the actual growth in the length of a plant.

Plant tissue culture has become a major thrust area in plant biotechnology. Name the basic concepts involved in it.
Triticale is a hexaploid. How will you derive F₁ hybrid from the following parent?

Parent Triticum durum × Secale cereale

\[
\begin{array}{c|c|c|}
\text{Parent} & \text{Triticum durum} & \text{Secale cereale} \\
2n & 28 & 14 \\
\end{array}
\]

? 

Answer any three of the following questions. Question No. 19 is compulsory.

(a) What is splicing?
(b) Complete the following table of genetically engineered products.

<table>
<thead>
<tr>
<th>Products</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Interferon</td>
<td>_</td>
</tr>
<tr>
<td>(2) Interleukin</td>
<td>_</td>
</tr>
<tr>
<td>(3) Renin inhibitors</td>
<td>_</td>
</tr>
</tbody>
</table>

Draw the floral diagram and write the floral formula of male flower of Ricinus communis.
Write any three differences between cyclic and non-cyclic photophosphorylation.

Explain the experiment to demonstrate that oxygen is evolved during photosynthesis.

Identify the following from the diagram given below:

(1) Name the disease of the plant.
(2) Give a note on the causative pathogen.
(3) Its control measures.
SECTION - IV/IV

Answer the following questions:

(a) Write the outline classification of Bentham and Hooker.

OR

(b) Explain the coupling aspect in Lathyrus odoratus.

(a) (i) What is respiratory quotient?

(ii) Work out the respiratory quotient of a carbohydrate and that of anaerobic respiration.

OR

(b) Write the economic importance of the plant which is the chief source of carbohydrates.
Which one of the following is not a true statement regarding innate immunity?

(a) Action of NK cells against virus injected cells
(b) Production of antibodies by B-lymphocytes
(c) Action of macrophages against pathogens
(d) Release of chemical alarms at the site of inflammation

Global warming is caused due to:

(a) human activities against nature
(b) extinction of animals and plants
(c) lack of rainfall
(d) presence of a hole in ozone layer
Which one of the following is an autoimmune disease?
(a) Myasthenia gravis  (b) AIDS  (c) Diabetes  (d) Stroke

In our country, younger generation is more intelligent than parental and grand parental generations. This is due to constant use of brain with better development. This refers to:
(a) Law of use and disuse  
(b) Over production  
(c) Natural selection theory  
(d) Inheritance of acquired characters

RBC diluting fluid is called:
(a) Hayem's solution  
(b) Glucose solution  
(c) Turk's solution  
(d) Toisson solution
Match the following:
(1) Plasmodium falciparum (i) Causes Kala Azar
(2) Leishmania donovani (ii) Skin Leishmaniasis
(3) Trypanosoma gambiens (iii) Malignant Tertian
(4) Leishmania tropica (iv) Causes African Sleeping Sickness

(a) (1) - (ii) (2) - (iii) (3) - (iv) (4) - (i)
(b) (1) - (iv) (2) - (ii) (3) - (i) (4) - (iii)
(c) (1) - (iii) (2) - (i) (3) - (iv) (4) - (ii)
(d) (1) - (iii) (2) - (i) (3) - (ii) (4) - (iv)

Net filtration force which is responsible for the filtration in glomerulus is:

80 mm Hg (b) 75 mm Hg (a)
50 mm Hg (d) 25 mm Hg (c)

Total absence of plasma cell causes:
(a) Albinism (b) Thalassemia
(c) Agammaglobulinemia (d) Sickle Cell Anemia
Answer any four questions.

Thyrotoxicosis is always associated with weight loss. How?

What are the symptoms of Cholera?

Define - Anaphylaxis.

How will you identify a healthy cattle?

Hardy-Weinberg equilibrium is applicable to large population only. Write its theoretical situations.

Write the international bio-diversity conservation strategies.

Answer any three questions. Question number 19 is compulsory.

(a) What are the deficiency diseases of vitamin A?

(b) Name the vitamin responsible for the clotting of blood.

Draw the diagram of Human Eye (V.S) and label the parts.

What are the main functions of antibodies?
What are the effects of ozone depletion?

In India, white leghorn breed of fowl is the most popular. Why?

SECTION - IV / IV

2x5=10

Answer the following questions:

In our country, people are aware of communicable diseases. So they are not affected by them. But non-communicable diseases start emerging now. Hypertension is one of such diseases. How will you measure blood pressure and write the consequences of hypertension.

OR

In 2005, due to tsunami, most of the people died in our country. At the same time there was not much death in Nicobar islands. So, nature selected those tribes to survive. Explain how natural selection is the tool for evolution of new species?

OR

Explain Bacterial Genetics.

OR

Write an essay on Electrocardiogram.