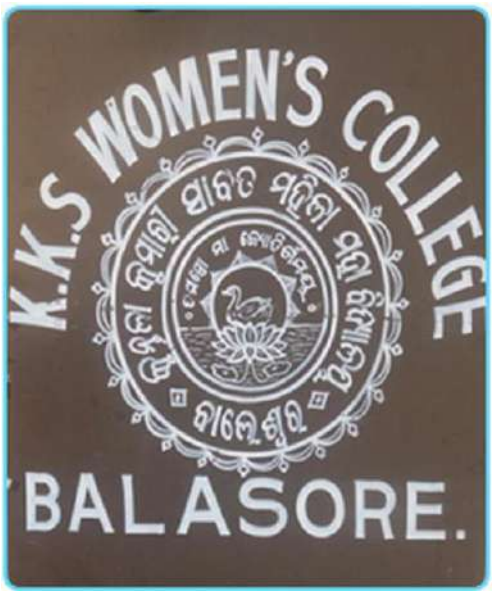

K.K.S. WOMEN'S COLLEGE, BALASORE.

DEPARTMENT OF ZOOLOGY

SUBJECT: ZOOLOGY (HONS.) CC-XI, CC-XII, DSE-I & DSE-II

(VTH SEMESTER)

QUESTION BANK: PREVIOUS YEAR QUESTIONS WITH MODEL QUESTIONS

2022

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

Part-I

1. Answer the following by fill in the blaks or single sentence : 1×8

   a) Which pyramidine base contains an amino group at carbon 4 ?

   b) Two strands in a DNA double is joined by ——.

   c) A nucleotide consists of ——.

   d) Semi-conservative DNA replication was first demostrated in ——.

   e) Which enzyme separates the two standards of DNA during replication ?

   f) Transcription is the transfer of genetic information from ——.

g) One end of tRNA matches genetic code in three-nucleotide sequences known as _____.

h) RISC stand for_____.

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What is oriC ?

b) What is lagging strand and leading strand ?

c) Write down function of Single-Strand-Binding (SSB) protein.

d) What is telomerase ?

e) Write down the role of TATA box.

f) What is siRNA ?

g) What is the function of a spliceosome ?

h) What is the central dogma ?

i) What is junk DNA called ?

j) What is the function of the Lac permease protein ?

Part-III

3. Answer any ***eight*** of the following : 2×8

a) How is Z-DNA different from B-DNA ?

b) What is the function of the Okazaki fragments ?

c) What are the two major functions of tRNA ?

d) What are the protein synthesis inhibitors and its uses ?

e) What are the disadvantages of RNA editing ?

f) What is Inducible operon ?

g) What is the role of telomeres in DNA replication ?

h) What is the difference between alternative splicing and exon shuffling ?

i) What are the three post-transcriptional modifications ?

j) What are components of replisome ?

Part-IV

4. a) Discuss the DNA replication in prokaryotes with suitable diagram. 6

OR

b) How Cot curves of nucleic acid is determined and write its significance.

5. a) Write down about the tRNA charging, initiation, elongation and termination during translation mechanism. 6

OR

b) Describe about eukaryotic transcription and its regulation.

6. a) Discuss the process of RNA editing. 6

OR

b) Describe the alternative splicing mechanism with examples.

7. a) Describe the gene silencing advanatges and disadvantages with example ? 6

OR

b) What is the potential functions of microRNA as biomarkers and therapeutic targets ?

□□

2022

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer *all* questions

Part-I

. Fill in the blanks/answer in single sentence : 1×8

a) Mendel took _____ contrasting characteristics of pea plants.

b) The cross where the sources of gametes are reversed is called _____.

c) What is the dinucleotide sequence of microsatellites ?

d) Any change in the nucleotide sequence of the DNA of a gene is called _____.

e) The place where genes are located in the chromosomes are called _____.

f) Cite an example of autosomal dominant character.

g) Mention the disease which causes excessive production of uric acid.

h) What is Hfr gene ?

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What is pleiotropy, cite an example ?

b) What is a semidominant trait ?

c) Which are the example of polygenic inheritance in humans ?

d) What is polyploidy and aneuploidy ?

e) What is TDF in human Y chromosome ?

f) What is multiple allele ?

g) What are episomes in viruses ?

h) What is complete linkage ?

i) What is the P element in drosophila ?

j) What are the examples of extrachromosomal inheritance ?

Part-III

Answer any ***eight*** of the following : 2×8

a) What causes epigenetic inheritance ?

b) What is the purpose of crossing over in meiosis ?

c) What causes chromosomal recombination ?

d) What is mutagen ? Cite example.

e) What does the SRY gene do in human ?

f) What is the Lyon's hypothesis ?

g) Write down the role of Col plasmids ?

h) What the CIB method in Drosophila is used for ?

i) What is the frameshift mutations ?

j) Why the complementation tests only work with recessive mutants ?

Part-IV

4. a) Discuss about the sex linked inheritance with example. 6

OR

b) What are the four stages of crossing over ? Describe the stages with suitable diagram ?

5. a) Discuss different types of structural chromosomal aberrations ? Write a note on Down's syndrome ? 6

OR

b) What are the main causes of mutations ? What is forward mutation and backward mutation ?

6. a) What are the main characteristics of extranuclear inheritance ? Discuss the X-chromosome dosage compensation in human. 6

OR

b) Briefly discuss about the significance of streptomycin resistance in Chlamydomonas ? Write a note on mitochondrial mutation in Saccharomyces.

7. a) What are the steps of conjugation in bacteria ? Discuss bacterial conjugation with suitable diagram. 6

OR

b) What is transposons and describe its function ? How do transposons affect human health ?

V-UG-Zool(DSE)-I (A+B+C)
(NC)

2022

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions from any one section

SECTION-A

Part-I

1. Fill in the blanks with suitable answer : 1×8

   a) _____ are known as "molecular Scissors".

   b) A bacterial artificial chromosome (BAC) is an _____ molecule.

   c) Southern blot is the technique used for _____ .

   d) DNA finger printing relies on _____ .

   e) The DNA finger printing process or technique was invented by _____ .

   f) Microinjection is used to inject in _____ of the target cells.

   g) The pH in animal cell culture medium is _____.

   h) GMO is stands for _____ .

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What is Plasmid ?

b) What are BACs and YACs ?

c) Name two commonly used vectors in genetic engineering.

d) What is the function of PCR ?

e) What is DNA finger printing ?

f) What is the purpose of gel electrophoresis ?

g) What is cloning vector ?

h) What is the cause of Thalassemia ?

i) Define gene therapy.

j) Write the three genetic diseases are found in man.

Part-III

3. Answer any ***eight*** of the following : 2×8

a) Define vector. Give the properties of a "Good vector".

b) What is the difference between cloning and expression vectors ?

c) Write conventional nomenclature of EcoRI.

d) Why is it called "Westernblotting" ?

e) What is ex-situ gene therapy ?

f) What is knock-out mice ?

g) Write down the characters of transgenic animals.

h) Write down the application of gene therapy.

i) Write the application recombinant DNA in medicine ?

j) Write down the principle of DNA microarray.

Part-IV

4. a) cDNA library and its application in animal biotechnology ? 6

OR

b) Discuss the role of restriction enzyme and its types.

5. a) What is Southern Blotting ? What are the steps of Southern blot procedure ? 6

OR

b) Describe the Sanger method of sequencing and its application in molecular biology.

6. a) Write down the role of nuclear transplantation in GMO. 6

OR

b) What is DNA microinjection ? Write down its application in transgenic animals.

7. a) Give an account on animal cell culture media. 6

OR

b) Describe the molecular diagnosis of genetic diseases and its prevention in animal.

SECTION-B

Part-I

1. Fill in the blanks : 1×8

a) ____ master endocrine gland.

b) ____ is heterocrine gland.

b) Describe the molecular diagnosis of neurodegenerative diseases and its prevention in human. 6

SECTION-C

Part-I

1. Fill in the blanks/answer in single sentence : 1×8

a) Neutrophils, basophil, lymphocytes, eosinophil and monocytes are examples of _____.

b) Which of the immunity is called the first line of defence ?

c) BCG vaccination (Bacillus Calmette Guerine) is injected to get immunity from _____.

d) The ability of the body to fight diseases is called _____.

e) What is the chemical name for Vitamin A ?

f) ELISA is stand for _____.

g) Immunoglobulins makes the largest percentage in breast milk is _____.

h) Type I hypersensitivity involves Ig _____.

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) Write the role of cytokines in the human body.

b) What is epitope ?

c) Name any two autoimmune diseases.

d) What is the role of adjuvants.

e) What is monoclonal antibody ?

f) What is MAC (membrane attack complex) ?

g) What is the hinge region in an antibody ?

h) What is recombinant vaccine ?

i) What are examples of APC cells ?

j) What is phagolysosome ?

Part-III

3. Answer any ***eight*** of the following : 2×8

a) Difference between B-cell and T-cell.

b) What is the antibody-dependent cellular cytotoxicity.

c) What is the Active immunization ?

d) What is the clonal selection theory ?

e) What is GALT and MALT ?

f) Write a short note on RIA.

g) What are the functions of MHC I and MHC II ?

h) What is the role of cytokines in inflammation ?

i) What is the main function of macrophages monocytes ?

j) What is booster dose ?

Part-IV

4. a) Briefly discuss different anatomical barriers in human immune system. 6

OR

b) What is cell mediated immunity ? Describe the components and functions of cell mediated immunity with diagram.

5. a) Describe the structure of Immunoglobulin. Add a note on their diversity and function. 6

OR

b) Explain the principles of ELISA with different types and functions.

6. a) Describe the main three complement system pathways. 6

OR

b) Explain Endogenous pathways of antigen processing and presentation.

7. a) Give an detail account of vaccine types and vaccination. 6

OR

b) Describe about hypersensitivity I and II.

2021

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer *all* questions

Part-I

1. Fill in the blanks : 1×8

   a) Which enzyme is involved in DNA super coiling of eukaryotic cell ___.

   b) The position in the DNA where DNA replication begins is called as ___.

   c) Which protein factor recognizes double stranded DNA of prokayotic cells during synthesis of RNA ?___

   d) What is the function of UAA, UGA and UAG codons in translation ? ___.

   e) The romoval of introns and joining of exons in eukaryotic mRNA processing is called as ___.

   f) The portion of a human gene which donot code for a protein is called ___.

g) When lactose level is high the lac operon will be switched on or switched off ____.

h) The double stranded RNA cleaved by an enzyme called Dicer and small fragments are generated about 22 nucleotides long are known as ____.

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What is semiconservative DNA replication ?

b) How double standard DNA can be separated from each other ?

c) How the initiation of transcription begins ?

d) Why genetic code is called degenerate ?

e) What is split genes ?

f) What is exon shuffling ?

g) What is the role of transcription factors ?

h) What is the function of aminoacyl t-RNA synthetase ?

i) What is the function of allolactose in operon ?

j) What are miRNA ?

Part-III

3. Answer any ***eight*** of the following : 2×8

a) What is Watson-Crick base pairing ?

b) How does the structure of RNA differ from that of DNA ?

c) What is bidirectional replication of DNA ?

d) What is caping and polyadenylation of RNA ?

e) How eukaryotic and prokaryotic genes are different ?

f) How termination of a polypeptide chain is achieved in protein synthesis ?

g) What is important feature in the globin mRNA ?

h) What are the role of transcription factor in RNA synthesis ?

i) How gene silencing is achieved by Si RNA ?

j) What is transcriptional activator ?

Part-IV

4. a) Write the process of DNA replication in eukaryotic cells. 6

OR

b) Describe the process of pyrimidine dimerization and its repair.

5. a) Discuss mechanism of transcription in prokaryotic cells. 6

OR

b) Discuss process of protein synthesis in prokaryotic.

6. a) Discuss the mechanism of splicing. 6

OR

b) Discuss the methods of tRNA processing.

7. a) Describe regulation of trp operon. 6

OR

b) Discuss various types of gene silencing.

□□

2021

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer *all* questions

Part-I

1. Fill in the blanks : 1×8

   a) When alleles of more than one trait are followed together in a cross, the resulted offsprings were inhereted independently that of the alleles. The law states that ___.

   b) When a red eye fly was erosed with a white eye fly, what ratio of flies will be obtained in the F_2 generation ___.

   c) In genetic mapping the relative location of genes in a chromosome is determined by their ___.

   d) The random abnormal number of chromosomes in an animal called as ___.

   e) The type of mutation that result due to change in a single base in the DNA called as ___.

f) Which type of sex chromosome is found in human male ___.

g) The genes for antibiotic resistance of chlamydomonas are found in which cell organelles ___.

h) Kappa particles inheritance of paramecium is an example of ___ inheritance.

Part-II

2. Answer any *eight* of the following : 1½ × 8

a) What is co-dominance ?

b) What is linkage in genetics ?

c) What is euploidy ?

d) What is deletion mutation ?

e) What is pyrimidine dimer and how this is happened ?

f) What is polyploidy ?

g) What is maternal effect ?

h) What is transformation ?

i) What is conjugation in bacteria ?

j) What is transduction ?

Part-III

3. Answer any ***eight*** of the following : 2×8

a) What is crossing over in genetics ?

b) What is monohybrid cross ?

c) What is inversion of chromosome ?

d) How male and females are different in chromosomal level ?

e) What is extra chromosomal inheritance ?

f) What is polygenic inheritance ?

g) What are chemical mutagen ? Give examples of any three.

h) How type of chromosomes determines the sex of drosophila ?

i) Write short notes on complementation test in bacterio phage.

j) Write notes on transposons of human.

Part-IV

4. a) Describe Mendel's law of inheritance. 6

OR

b) Discuss cytological basis of crossing over.

5. a) Discuss types of chromosomal aberrations by number. 6

OR

b) Discuss molecular basis of mutation with examples of UV induced mutation.

6. a) Discuss sex determination in man with proper diagram. 6

OR

b) Discuss various types of extra-chromosomal inheritance.

7. a) Discuss transposons in bacteria. 6

OR

b) Discuss p-elements in Drosophila.

2021

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions from any ***one*** section.

SECTION-A

Part-I

1. Fill in the blanks : 1×8

   a) Restriction enzymes _____ types are called molecular scissors.

   b) Expression vector are used to get _____ products.

   c) _____ is the method to identify a particular individual rather than simply identifying a species ortrait.

   d) _____ is the process by which DNA fragments get separated on the basis of size.

   e) Animals that have had their DNA manipulated to possess and express an extra or foreign gene are called as _____animals.

f) Transgenic animals serve as _____ for human for better understanding of genes and their functions.

g) Which genetic disease is called as 'Royal Disease' ?

h) The most important example of point mutation is found in a disease called _____.

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What are the features of a cloning vectors ?

b) What is electroporation ?

c) What do you mean by DNA microinjection.

d) In Biotechnology GMO refers to what ? Write two important roles of GMO.

e) What can be detected by Western blotting ?

f) What is DNA fingerprinting ?

g) Write the principle behind knock-out mice construction.

h) What is the main cause of thalassemia ?

i) What are the two different kinds of gene therapy ?

j) What are the basic requirements of animal cell culture ?

Part-III

3. Answer any ***eight*** of the following : 2 × 8

a) Write the features of cosmid and its importance as a vector.

b) Write a short note on plaque hybridization.

c) Write the steps of southern Hybridization.

d) Write a note on various applications of transgenic animals.

e) Write the steps of animal cloning.

f) Write the steps of knock out mice construction.

g) What is ex-situ gene theraphy ?

h) Write the steps of insulin production using recombinant DNA technology.

i) How can cystic fibrosis be diagnosed using molecular tools.

j) Write some applications of r-DNA technology.

Part-IV

4. a) Write the process of genomic library construction and screening by colony hybridization. 6

OR

b) Give a detail account of gene/vector transformation using calcium chloride method.

5. a) What do you mean by PCR. Add a note on the principle and application of PCR. 6

OR

b) Describe the Sangers protocol/technique for DNA sequencing.

6. a) Write the process of production of transgenic mice. 6

OR

b) Give a detail account of production of donor organs.

7. a) Explain in detail about the molecular diagnosis of Haemophilia. 6

OR

b) Write the method of synthesis of Human Growth Hormone.

SECTION-C

(Immunology)

Part-I

1. Answer the following : 1×8

a) Which T-Lymphocyte kills the virus developing in host cells ?

b) Antibodies are produced from which cells ?

c) Rheumatoid arthritis is classified under which disease ?

d) The smallest part of an antigen which evokes formation of antibody is called as ?

e) What is the full name of ELISA ?

f) Which MHC molecule activates cytotoxic T-Lymphocytes ?

g) Which is the smallest immunoglobin molecule ?

h) What is the full name of RIA ?

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What are the components of Innate immunity ?

b) What is anatomical barriers ?

c) Which immune cells become inactive by HIV virus.

d) What are adjuvants ?

e) What is the function of MHC II molecule ?

f) What is direct ELISA ?

g) What are the function of cytokines ?

h) How IgM differs from IgG ?

i) What is antigen ?

j) What is attenuated virus ?

Part-III

3. Answer any ***eight*** of the following : 2×8

a) What is inflammatory reaction ?

b) What is humoral Immunity ?

c) What is clonal selection ?

d) What are the factors immunogenecity ?

Part-II

2. Answer any ***eight*** of the following : $1\frac{1}{2} \times 8$

a) What are the components of Innate immunity ?

b) What is anatomical barriers ?

c) Which immune cells become inactive by HIV virus.

d) What are adjuvants ?

e) What is the function of MHC II molecule ?

f) What is direct ELISA ?

g) What are the function of cytokines ?

h) How IgM differs from IgG ?

i) What is antigen ?

j) What is attenuated virus ?

Part-III

3. Answer any ***eight*** of the following : 2×8

a) What is inflammatory reaction ?

b) What is humoral Immunity ?

c) What is clonal selection ?

d) What are the factors immunogenecity ?

6. a) Describe structure and function of MHC molecule. 6

OR

b) Describe properties and function of cytokines.

7. a) Discuss different types of hypersensitivity ? 6

OR

b) Describe different types of vaccine.

SUBJECT: ZOOLOGY (HONS.) CC-XI, CC-XII, DSE-I & DSE-II

(VTH SEMESTER)

OTHER QUESTIONS: PREVIOUS YEAR QUESTIONS WITH MODEL QUESTIONS

+3 5th Sem
Zoo (H) – XI

2018

Full Marks : 50

Time : 2½ hours

The questions are of equal value

Answer **all** questions

1. Write short notes on the following :

(a) Central Dogma

(b) Replication of telomeres

(c) B-DNA and Z-DNA

(d) RNA priming.

2. Describe in detail, double-helical structure of DNA as propose by Watson and Crick.

Or

Describe the experimental evidence which suggest that DNA replication is semi-conservatives.

3. Describe the role of different RNA polymerases in eukaryotes.

Or

Write notes on the following :

(a) Semi-discontinuous replication of DNA

(b) Replication of circular DNA.

4. Explain the protein synthesis in eukaryotes.

Or

Answer the following questions :

(a) Write about the ribosome structure and assembly.

(b) What is genetic code and what are the generalisations of the genetic code?

5. Explain the principles of transcriptional regulation with examples from lac-operon and trp-operaon.

Or

Write notes on the following :

(a) DNA repair

(b) RNA interference.

★★★

F3 5th Semester - Science/Hons - 2018

2018

Full Marks : 50

Time : As in the Programme

The figures in the right-hand margin indicate marks.

Answer all questions from both the Groups.

GROUP–A

'କ'-ବିଭାଗ

1. Define each of the following in one sentence: 1×10=10

ନିମ୍ନଲିଖିତ ପ୍ରତ୍ୟେକର ସଂଜ୍ଞା *ଗୋଟିଏ* ବାକ୍ୟରେ ପ୍ରଦାନ କର:

a) Cell division

କୋଷ ବିଭାଜନ

b) Organizer

ସଂଗଠକ

c) Placenta

ଭ୍ରୂଣପୁଷ୍ପ

d) Metamorphosis

ରୂପାନ୍ତର

e) IVF

ଆଇ.ଭି.ଏଫ୍.

f) In vitro

ଇନ୍ ଭିଟ୍ରୋ

g) Embryo

ଭ୍ରୂଣ

h) Stem cell

କାଣ୍ଡ କୋଷ

i) Ageing

ବାର୍ଦ୍ଧକ୍ୟ

j) Polyspermy

ବହୁ ଶୁକ୍ରାଣୁ

GROUP–B

'ଖ'-ବିଭାଗ

Answer **all** the questions: $8 \times 5 = 40$

ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ:

2. Give an account of pattern formation.

ପ୍ରକାର ସୃଷ୍ଟିର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

OR/କିମ୍ବା

Explain cell to cell interaction.

କୋଷ ଓ କୋଷ ମଧ୍ୟରେ ପାରସ୍ପରିକ କ୍ରିୟା ବ୍ୟାଖ୍ୟା କର ।

3. Discuss gastrulation in chick.

କୁକୁଡ଼ାର ଗ୍ୟାଷ୍ଟ୍ରୁଲାଭବନ ଆଲୋଚନା କର ।

OR/କିମ୍ବା

Write an account on spermatogenesis.

ଶୁକ୍ର ଉତ୍ପତ୍ତିର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

4. Mention fate of germ layers in detail.

ବିଶଦ ଭାବରେ ଜାୟକ ସ୍ତରର ଭାଗ୍ୟ ଦର୍ଶାଅ ।

OR/କିମ୍ବା

State an illustrative account of extra embryonic membranes in birds.

ପକ୍ଷୀମାନଙ୍କର ଭିନ୍ନ ଭ୍ରୂଣୀୟ ଝିଲ୍ଲିଗୁଡ଼ିକର ଏକ ଚିତ୍ରସହ ବିବରଣୀ ପ୍ରଦାନ କର ।

5. Define and Discuss regeneration in Amphibia.

ଉଭୟଚରରେ ପୁନଃସୃଷ୍ଟି ସଂଜ୍ଞା ସହ ଆଲୋଚନା କର ।

OR/କିମ୍ବା

Give an account of metamorphosis in Amphibi

ଉଭୟଚର ଠାରେ ରୂପାନ୍ତରର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

6. Elucidate stem cell culture with its advantages

ସୁବିଧା ସହ କାଣ୍ଡକୋଷ ପୋଷଣ ଦର୍ଶାଅ ।

OR/କିମ୍ବା

Define amniocentesis. Enlist the detailed protocol with its importance.

ଆମ୍ନିଓସେଣ୍ଟେସିସ୍‌ର ସଂଜ୍ଞା ନିରୂପଣ କର । ଏହାର ପଦ୍ଧତି ବିଶଦ ଭାବରେ ପ୍ରାଧାନ୍ୟ ସହ ତାଲିକା ପ୍ରସ୍ତୁତ କର ।

+3 5th Sem
Zoo (H) – XI

2019

Full Marks : 50

Time : 2½ hours

The figures in the right-hand margin indicate marks

Answer **all** questions

1. Write notes on *any two* of the following : 2×7

(a) Replication of telomere

(b) Wobble's hypothesis

(c) Processing of mRNA

(d) Gene silencing

(e) Recombination repair.

2. Briefly discuss the process of replication with suitable diagram highlighting the role of DNA polymerases in prokaryotes. 12

Or

Write short notes on the following : 2×6

(a) Transcription in prokaryotes

(b) RNA polymerases in eukaryotes.

3. What is 'operon concept' ? Explain the process of attenuation involved in the regulation of gene expression with reference to tryptophan operon with suitable sketch. 12

Or

Write short notes on the following : 2×6

(a) Translation initiation in prokaryotes

(b) RNA editing.

4. What is DNA repair? Explain the strategies involved in excision and mismatch DNA repair with suitable diagrams. 12

Or

Write short notes on the following : 2×6

(a) RNA interference

(b) siRNA and its significance.

★★★

+3-VS-CBCS-Sc(H) —
Zool (Core – 11) R & B

2021

Time : As in Programme

Full Marks : 50

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

1. Fill in the blanks : 1×10 = 10

   (a) Mosaic development was experimentally demonstrated by _____

   (b) During induction the tissue that produces a signal that changes the cellular behaviour of another tissue is called a _____

   (c) The process of formation of gametes is known as _____

(d) The types of egg that are surrounded by shell is known as _____ egg.

(e) Triploblastic embryo is produced by morphogenetic movement collectively called _____

(f) Attachment of blastocyst to uterine wall is known as _____

(g) The type of placenta in which villi are uniformly distributed all over the surface of chorion is called _____

(h) Hormone that causes metamorphosis in amphibians is known as _____

(i) The branch of science that deals with the study of teratogenesis is called _____

(j) The stem cell that can form all the type of cells in the body including placenta is known as _____

2. Describe in detail Pattern Formation. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Epigenesis

(b) Asymmetric cell division

3. Give a detailed account of cleavage. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Spermatogenesis

(b) Types of egg

4. Discuss, in detail, placenta and its function. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Fate of germ layer

(b) Amnion

5. Describe, in detail, regeneration. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Retrogressive metamorphosis.

(b) Ageing

6. Describe, in detail, stem cell culture and its applications. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Teratogenesis

(b) IVF

2018

Full Marks : 50

Time : As in the Programme

The figures in the right-hand margin indicate marks.

Answer all questions from both the Groups.

GROUP–A

'କ'-ବିଭାଗ

1. Define each of the following in one sentence: 1×10=10

ନିମ୍ନଲିଖିତ ପ୍ରତ୍ୟେକର ସଂଜ୍ଞା ଗୋଟିଏ ଲେଖାଏଁ ବାକ୍ୟରେ ଲେଖ :

a) ds DNA

ଡି.ଏସ୍. ଡି.ଏନ୍.ଏ.

b) t RNA

ଟି ଆର.ଏନ୍.ଏ.

c) Exon

ଏକ୍ସନ୍

d) Polypeptide
ପଲିପେପ୍‌ଟାଇଡ୍

e) Prokaryote
ଆଦି ନ୍ୟଷ୍ଟିଯୁକ୍ତ ଜୀବନ

f) lac operon
ଲାକ୍ ଅପେରନ୍

g) Ribosome
ରାଇବୋସୋମ୍

h) Cot curve
କଟ୍ ବକ୍ରରେଖା

i) Gene Regulation
ଗୁଣପିଣ୍ଡ ନିୟନ୍ତ୍ରଣ

j) Wobble Hypothesis
ଓବ୍ଲ ତତ୍ତ୍ୱ

GROUP–B
'ଖ'-ବିଭାଗ

Answer **all** the questions: 8×5=40
ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ ।

2. Enlist salient features of DNA double helix.
ଡିଏନଏ ଦ୍ୱିକୁଣ୍ଡଳୀର ମୁଖ୍ୟ ବୈଶିଷ୍ଟ୍ୟର ତାଲିକା ପ୍ରସ୍ତୁତ କର ।

OR/କିମ୍ବା

Discuss DNA replication in eukaryotes.
ନ୍ୟଷ୍ଟିଯୁକ୍ତ ପ୍ରାଣୀମାନଙ୍କର ଡି.ଏନ.ଏ. ପ୍ରତିରୂପୀକରଣ ଆଲୋଚନା କର ।

3. Mention regulation of transcription.
ଟ୍ରାନ୍‌ସକ୍ରିପ୍‌ସନ୍ ନିୟନ୍ତ୍ରଣ ଦର୍ଶାଅ ।

OR/କିମ୍ବା

Give an account of RNA polymerase.
ଆର.ଏନ୍.ଏ ପଲିମେରେଜର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

4. Differentiate between prokaryotes and eukaryotes.
ଆଦିନ୍ୟଷ୍ଟିଯୁକ୍ତ ଜୀବନ ଓ ନ୍ୟଷ୍ଟିଯୁକ୍ତ ଜୀବନର ପାର୍ଥକ୍ୟ ଦର୍ଶାଅ ।

OR/କିମ୍ବା

Mention protein synthesis in prokaryotes.
ଆଦିନ୍ୟଷ୍ଟି ଜୀବନରେ ପୁଷ୍ଟିସାର ସଂଶ୍ଳେଷଣ ଦର୍ଶାଅ ।

5. State the structure of globin m RNA.

ଗ୍ଲୋବିନ୍ ଏମ୍ ଆର.ଏନ୍.ଏ.ର ଗଠନ ଦର୍ଶାଅ ।

OR/କିମ୍ବା

Give an account of exons and introns.

ଏକ୍ସନ୍ ଓ ଇନଟ୍ରନର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

6. Explain gene silencing in detail?

ବିଶଦ ଭାବରେ ଗୁଣପିଣ୍ଡ ନରବତା ବ୍ୟାଖ୍ୟା କର ।

OR/କିମ୍ବା

Discuss genetic imprinting with its significance.

ମହତ୍ତ୍ୱ ସହ ଗୁଣପିଣ୍ଡ ଛାପ ଆଲୋଚନା କର ।

+3 5th Sem
Zoo (H) – XII

2019

Full Marks : 50

Time : 2½ hours

The figures in the right-hand margin indicate marks

Answer **all** questions

1. Write notes on *any two* of the following : 2×7

(a) Epistasis

(b) Sex-linked inheritance

(c) Effect of UV and chemical mutagens

(d) Antibiotic resistance in *Chlamydomonas*

(e) Ac-Ds elements in maize.

2. Discuss the different types of crossing-over highlighting cytological basis and molecular mechanism with suitable diagram. Add a note on its significance. 12

Or

Write notes on the following : 2×6

(a) Linkage

(b) Multiple alleles.

3. Describe briefly the chromosomal mechanism of sex determination in Drosophila and Man with suitable illustrations. 12

Or

Write notes on the following : 2×6

(a) Chromosomal aberration

(b) Frame-shift mutation.

4. What is polygenic inheritance? Discuss about the polygenic inheritance highlighting its significance with suitable examples. 12

Or

Write notes on the following : 2×6

(a) Transformation in bacteria

(b) Bacteriphage.

★★★

+3-VS-CBCS-Sc(H) —
Zool (Core – 12) R & B

2021

Time : As in Programme

Full Marks : 50

The figures in the right-hand margin indicate marks.

Answer all questions.

Draw diagram wherever necessary.

1. Fill in the blanks : 1×10 = 10

   (a) The enzymes that participate in overwinding or underwinding of DNA is called _____.

   (b) Repetitive sequnce of non-coding DNA found at the ends of each of our chromosomes is known as _____.

   (c) _____ enzyme is responsible for DNA replication.

   (d) The synthesis of RNA copy of a DNA is known as _____.

   (e) Site of protein synthesis in cell is known as _____.

(f) The three-nucleotide sequence of DNA or RNA that specifies an amino acid is known as a _____.

(g) A gene in which the coding sequence called exons are interrupted by non-coding sequence called introns is known as _____.

(h) The Multi-subunit RNA-protein complex responsible for removal of introns from pre-mRNA is called _____.

(i) The proteins that control the rate of transcription by binding to a specific DNA sequence is known as _____.

(j) Addition of a poly A tail to a mRNA transcript is known as _____.

2. Discuss replication of DNA in Eukaryotes.

$8 \times 1 = 8$

OR

Write notes on : 4×2 = 8

(a) Watson and Crick model of DNA

(b) Licensing Factors

3. Describe in detail transcription in Prokaryotes. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) RNA polymerase

(b) Regulation of transcription

4. Give detailed account of mechanism of protein synthesis in prokaryotes. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Wobble hypothesis

(b) Inhibitors of translation

5. Describe in detail the mechanism of splicing. 8×1 = 8

OR

Write notes on : $4 \times 2 = 8$

(a) Concept of exons and introns

(b) Exon shuffling

6. Explian transcriptional regulation in prokaryotes using lac operon as an example. Why is transcription regulation important ? $8 \times 1 = 8$

OR

Write notes on : $4 \times 2 = 8$

(a) Gene silencing

(b) Si RNA

2018

Full Marks : 50

Time : As in the Programme

The figures in the right-hand margin indicate marks.

Answer all questions from both the Groups.

GROUP–A

'କ'-ବିଭାଗ

1. Define each of the following in one sentence: 1×10=10

ନିମ୍ନଲିଖିତ ପ୍ରତ୍ୟେକର ସଂଜ୍ଞା ଗୋଟିଏ ବାକ୍ୟରେ ଉଲ୍ଲେଖ କର :

a) Ethology
ବ୍ୟବହାର ବିଜ୍ଞାନ

b) Reflex path
ପ୍ରତିକ୍ଷିପ୍ତ ପଥ

c) Learning
ଶିକ୍ଷା

d) Altruism
ତ୍ୟାଗ

e) Hamilton's rule
ହାମିଲଟନଙ୍କ ନିୟମ

f) Sexual dimorphism
ଲିଙ୍ଗୀୟ ଭିନ୍ନତା

g) Parental care
ଅପତ୍ୟ ଯତ୍ନ

h) Biological clock
ଜୈବ ଘଡ଼ି

i) Jet Lag
ଜେଟ୍ ଲାଗ୍

j) Round dance of honey bee
ମଧୁ ମକ୍ଷିକାର ଗୋଲାକାର ନୃତ୍ୟ

GROUP–B
'ଖ'-ବିଭାଗ

Answer **all** the questions: 8×5=
ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ :

2. Enlist the objective of behaviour.
ଆଚରଣର ଆଭିମୁଖ୍ୟ ତାଲିକାଭୁକ୍ତ କର ।

OR/କିମ୍ବା

Write notes on: 4×2
ବିବରଣୀ ଲେଖ :

a) Nico Tinbergen and
ନିକୋ ଟିନ୍‌ବରଜେନ୍ ଓ

b) Konrad Lorenz.
କୋନ୍‌ରାଡ୍ ଲୋରେନ୍ଜ ।

3. Give an account of learning. 8
ଶିକ୍ଷାର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

OR/କିମ୍ବା

Write notes on: 4×2=8
ବିବରଣୀ ଲେଖ :

a) Characteristics of reflex and
ପ୍ରତିକ୍ଷିପ୍ତର ବୈଶିଷ୍ଟ୍ୟ ଓ

b) Orientation of animals.
ପ୍ରାଣୀମାନଙ୍କ ଅନୁସ୍ଥିତି ।

4. Discuss the social organization of honey bee. 8
ମଧୁମକ୍ଷିକାର ସାମାଜିକ ସଂଗଠନ ଆଲୋଚନା କର ।

OR/କିମ୍ବା

Write notes on: 4×2=8
ବିବରଣୀ ଲେଖ :

a) Waggle dance of honey bee and
ମଧୁମକ୍ଷିକାର ୱାଗଲ ନୃତ୍ୟ ଓ

b) Formation of bee hive.
ମହୁଫେଣା ପ୍ରସ୍ତୁତି ।

5. Give and account of intrasexual selection.
ଅନ୍ତଃଲିଙ୍ଗୀୟ ଚୟନର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

OR/କିମ୍ବା

Write notes on: 4×2
ବିବରଣୀ ଲେଖ :

a) Courtship and
ଅଭିସାର

b) Sexual conflict.
ଲିଙ୍ଗୀୟ ଦ୍ୱନ୍ଦ୍ୱ ।

6. Enlist the advantages of biological clock.
ଜୈବଘଡ଼ିର ସୁବିଧାଗୁଡ଼ିକର ତାଲିକା ପ୍ରସ୍ତୁତ କର ।

OR/କିମ୍ବା

Write notes on: 4×2
ବିବରଣୀ ଲେଖ :

a) Entertainment and
ଆମୋଦପ୍ରମୋଦ ଓ

b) Jet lag.
ଜେଟ୍ ଲାଗ୍ ।

+3-VS-CBCS-Sc(H) —
Zool (DSE – 1) R & B

2021

Time : As in Programme

Full Marks : 50

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

1. Fill in the blanks : 1×10 = 10

   (a) The scientific discipline that deals with study of animal behaviour is known as _____

   (b) Russian physiologist _____ is known for his work in "Classical Conditioning".

   (c) When the speed of locomotion is affected by external stimulation the kinesis is called _____

   (d) The process of separating useful sensory information from the many thousands of stimuli present in the external environment, so that only potential useful information is sent to the brain is called _____

(e) Hepling of selfless behaviour existing between members of a social group is known as _____

(f) In which region of the brain is Master Clock-SCN located ?

(g) The condition where the two sexes of the same species exhibit different characteristic beyond the differences in their sexual organs is known as _____

(h) Karl Von Frish received Nobel Prize for his pioneering research on language or communication of _____

(i) Study of periodicity in behaviour in organism is known as _____

(j) The master clock controls the formation of _____ hormone.

2. What is Hypothalamus ? Discuss in detail how hypothalamus regulates specific behaviour.

$8 \times 1 = 8$

OR

Write notes on : 4×2 = 8

(a) Niko Tinbergen

(b) Stimulus Filtering

3. Describe the process of learning in animals. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Reflexes

(b) Kinesis

4. Describe, in detail, the foraging behaviour of honey bee. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Polyethism

(b) Hamilton's Rule

5. What is Sexual Selection ? Discuss intra-sexual and inter-sexual selection. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Sexual dimorphism in birds

(b) Infanticide

6. What is Biological Clock ? Discuss in detail 'Circadian Rhythm'. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Circalunar Clock

(b) Jet Lag

2018

Full Marks : 50

Time : As in the Programme

The figures in the right-hand margin indicate marks.

Answer all questions from both the Groups.

GROUP–A

'କ'-ବିଭାଗ

1. Define each of the following in **one** sentence : 1×10=10

ନିମ୍ନଲିଖିତ ପ୍ରତ୍ୟେକର ସଂଜ୍ଞା ଗୋଟିଏ ବାକ୍ୟରେ ଲେଖ :

a) Apiculture

ମହୁଚାଷ

b) Drone

ଡ୍ରୋନ୍

c) Queen

ରାଣୀ

d) Silk

ରେଶମ

e) Cocoon
କୋଷା

f) Beetle
ଟାଣ ଖୋଳପା ପୋକ

g) Aquaculture
ଜଳୀୟ ଜୀବଚାଷ

h) Crustacea
ଟାଣ ଖୋଳପାଧାରୀ

i) Poultry farming
କୁକୁଡ଼ା ଚାଷ

j) Exotic breed
ବିଦେଶୀ ପ୍ରକାର

GROUP–B
'ଖ'-ବିଭାଗ

Answer all the questions: 8×5

ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ :

2. Give an account of beekeeping.
ମହୁମାଛି ପାଳନର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

OR/କିମ୍ବା

Discuss the beneficial products of honeybees.
ମଧୁମକ୍ଷିକାର ଉପକାରୀ ପଦାର୍ଥଗୁଡ଼ିକ ଆଲୋଚନା କର ।

3. Explain mulberry silk culture in details.
ବିଶଦ ଭାବରେ ତୁତ ରେଶମ ଚାଷ ବ୍ୟାଖ୍ୟା କର ।

OR/କିମ୍ବା

Enlist different silks of India.
ଭାରତର ବିଭିନ୍ନ ରେଶମର ତାଲିକା ପ୍ରସ୍ତୁତ କର ।

4. Give an account of aquaculture.
ଜଳଜୀବଶାଳାର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

OR/କିମ୍ବା

Describe the diseases of fish and their control.
ମତ୍ସ୍ୟମାନଙ୍କର ବିଭିନ୍ନ ରୋଗ ଓ ତାହାର ନିୟନ୍ତ୍ରଣ ବର୍ଣ୍ଣନା କର ।

5. Elucidate the culture of pearl with illustration.
ଚିତ୍ରସହ ମୁକ୍ତାଚାଷ ବର୍ଣ୍ଣନା କର ।

OR/କିମ୍ବା

Give an account of culture of crabs.
କଙ୍କଡ଼ା ଚାଷର ଏକ ବିବରଣୀ ପ୍ରଦାନ କର ।

6. How can poultry farm be managed?

କୁକୁଡ଼ା ଫାର୍ମ କିପରି ପରିଚାଳନା କରାଯାଇପାରିବ ?

OR/କିମ୍ବା

State the commercial importance of dairy.

ଗବ୍ୟଶାଳାର ବାଣିଜ୍ୟିକ ପ୍ରାଧାନ୍ୟ ଦର୍ଶାଅ ।

+3-VS-CBCS-Sc(H) —
Zool (DSE – 2) R & B

2021

Time : As in Programme

Full Marks : 50

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

Give diagram wherever necessary.

1. Define each of the following in one sentence : 1×10 = 10

   (a) Larva develops into immobile _____.

   (b) Pollen is a good source of _____ for honey bee.

   (c) *Antheraea assamensis* produces _____ silk.

   (d) The newly hatched larva of a silkworm is known as _____.

   (e) Mature parent fish that is usually used in hatchery for breeding purpose is called _____.

(f) The technique of breeding the fish by administering pituitary gland extract injection is known as _____.

(g) Raising soft shelled crabs for a certain period until their exoskeleton gets hardened is known as crab _____ system.

(h) The accumulation and growth of unwanted organisms on the oyster shells is known as _____.

(i) Breeds of plants or animals which are foreign in origin and not native is known as _____ breeds.

(j) High meat producing bird or poultry breeds are called _____ poultry.

2. Discuss in detail the process of setting up an apiary. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Bee Pasturage

(b) Honey extraction

3. Give an account of diseases of silk worm. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Chawki rearing

(b) Types of silk worm

4. Describe the process of induced breeding in fishes. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Brood stock management

(b) Preservation of fish

5. Give a detailed account of Pearl culture. 8×1 = 8

OR

Write notes on : 4×2 = 8

(a) Crab culture

(b) Culture of Giant Murrel (Air breathing fish)

6. Discuss dairy diseases and their management. $8 \times 1 = 8$

OR

Write notes on : $4 \times 2 = 8$

(a) Classification of poultry on the basis of production

(b) Commercial importance of dairy

Vth SEMESTER
Core Course- XI: Molecular Biology
Section –A

1. DNA topology
2. Salient features of DNA double helix.
3. C0t curves.
4. Structure of t RNA.
5. Licensing factors.
6. Semi - conservative replication.
7. Semi-discontinuous replication.
8. RNA priming
9. Replication of telomeres.
10. Transcription unit
11. Genetic code
12. Wobble hypothesis.
13. Difference between prokaryotic and eukaryotic translation.
14. Split genes.
15. Alternative splicing.
16. Exon shuffling .
17. RNA editing.
18. Silencer elements
19. Gene slicing.
20. Genetic imprinting.
21. RNA interference

Section – B

1. Describe the Watson and Crick model of DNA?
2. Describe denaturation and renaturation of DNA?
3. Describe the process of DNA replication in prokaryotes?
4. Describe the process of DNA replication in eukaryotes?
5. Describe the mechanism of transcription in prokaryotes?
6. Describe the mechanism of transcription in eukaryotes?
7. Describe the transcription unit and process of regulation of transcription?
8. Describe the process of proteins synthesis in prokaryotes?
9. Explain the mechanism of splicing?
10. Describe the process of transcriptional regulation in prokaryotes?
11. Describe the process of transcriptional regulation in eukaryotes?
12. Describe the structure and functioning of lacoperon?
13. Describe the structure and functioning of trpoperon?

Discipline Specific Elective Paper – II: Immunology

Section –A

1. Early theories of immunology.
2. Haematopoiesis.
3. Differentiate between Cell-mediated and humoral immunity.
4. Differentiate between passive and active immunity.
5. Immune dysfunctions.

6. Differentiate between antigenicity and immunogenicity.
7. Adjuvants
8. Haptens.
9. Factors influencing immunogenicity.
10. B and T – cell epitopes.
11. Monoclonal antibodies.
12. Endogenous pathways of complement activation.
13. Exogenous pathway of complement activation.
14. Recombinant vaccines.
15. DNA vaccines.
16. Gell and Coomb's classification.

Section –B

1. Describe the different types of cells of the immune system?
2. Describe the different types of organs of the immune system?
3. Describe the process of inflammation in detail?
4. Give an account on the cells and molecules involved in innate immunity?
5. Describe the structure and function of different classes of immunoglobulins?
6. Describe the mechanism of antigen and antibody interactions?
7. Describe the various types of immunoassays with examples?
8. Describe the components and pathways of complement activation?
9. Describe the properties and functions of cytokines?
10. Briefly describe about various types of hypersensitivities.