

2016

(6th Semester)

ZOOLOGY

Paper : ZL-IX

(Molecular Biology and Genetics)*Full Marks : 55**Time : 2½ hours***(PART : B—DESCRIPTIVE)***(Marks : 35)**The figures in the margin indicate full marks
for the questions*

1. Describe in detail the structure of DNA. 7

Or

Write a short note on polytene and lambrush
chromosome. 3½×2=7

2. Discuss the nucleotide excision, base excision
and mismatch repair systems of DNA. 7

Or

Explain the semi-conservative method of DNA
replication. 7

3. Describe the process of transcription in
prokaryotic cell. 7

Or

What is an 'operon'? Write a short note on
lac operon. 2+5=7

4. Explain Mendel's laws of inheritance. 7

Or

What is cytoplasmic inheritance? Explain it
with two suitable examples. 7

5. What is mutation? Explain different types of
gene mutation. 7

Or

Write short notes on the following : 7

*(a) Haemophilia**(b) Turner's Syndrome*

Subject Code : ZOO/VI/09

Booklet No. **A**

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Booklet No. B

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ZOO/VI/09

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(6th Semester)

ZOOLOGY

Paper : ZL-IX

(Molecular Biology and Genetics)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. Which one of the following is heterochromatin?

- (a) One X chromosome of human female ()
- (b) 21st chromosome in human male ()
- (c) XXY chromosome in human male ()
- (d) XO chromosome in drosophila ()

(2)

2. In DNA replication, the strand which is synthesized continuously is called

(a) Okazaki fragments ()

(b) lagging strand ()

(c) leading strand ()

(d) template strand ()

3. Which one of the following is involved in the synthesis of mRNA?

(a) RNA polymerase I ()

(b) RNA polymerase II ()

(c) RNA polymerase III ()

(d) All of the above ()

(3)

4. ABO blood group is an example of

(a) sex-linked inheritance ()

(b) non-disjunction of chromosomes ()

(c) pleiotropic genes ()

(d) multiple allelism ()

5. Monosomy with a loss of one X chromosome in human is

(a) Klinefelter's syndrome ()

(b) Turner's syndrome ()

(c) Down's syndrome ()

(d) Haemophilia ()

(4)

SECTION—B

(Marks : 15)

Answer/Write short notes on the following in 5 to 8 sentences each : 3×5=15

1. Draw a labelled diagram of tRNA.

(5)

2. Double strand breakage and repair of DNA

(6)

3. RNA polymerase

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(7)

4. Pleiotropism

(8)

5. Non-disjunction of chromosome

2016

(6th Semester)

ZOOLOGY

Paper : ZL-X

(**Developmental Biology**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. What is the basic difference between *in vivo* and *in vitro* fertilization? Describe the gamete binding and acrosomal reaction in mammalian *in vivo* fertilization. 2+5

Or

What do you mean by cleavage? Enlist the different types of cleavage with at least one example of each. 2+5

2. What is blastula? Describe blastulation in frog. 2+5

Or

What do you mean by extra-embryonic membrane? Describe different types of extra-embryonic membranes in chick with their physiological functions. 2+5

3. Write short notes on the following : $3\frac{1}{2}\times 2=7$
(a) Involution
(b) Invagination

Or

Discuss the concept of organizer with Spemann's experiment. 7

4. What do you understand by metamorphosis? Discuss the amphibian metamorphosis and its hormonal regulation. 2+5

Or

Define regeneration. Write a descriptive note on the regeneration in vertebrates. 2+5

5. Define stem cells. Write on different types of stem cells with at least one example of each. 2+5

Or

Write a descriptive note on the concept of transgenesis. 7

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(6th Semester)

ZOOLOGY

Paper : ZL-X

(Developmental Biology)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. The part of development which occurs before birth/hatching is known as

(a) prenatal development ()

(b) embryonic development ()

(c) postnatal development ()

(d) Both (a) and (b) ()

(2)

2. Cleavage differs from normal cell division because cleavage does not have

(a) G1 and G2 phase ()

(b) S phase ()

(c) M phase ()

(d) None of the above ()

3. Archenteron or primitive gut is well evident in

(a) zygote ()

(b) blastula ()

(c) gastrula ()

(d) adult animal ()

(3)

4. Which of the following occurs in *Hydra* regeneration?

(a) Epimorphosis ()

(b) Morphallaxis ()

(c) Stem cell mediated ()

(d) Compensatory regeneration ()

5. Juvenile hormone in insect is secreted by

(a) corpora allata ()

(b) prothoracic gland ()

(c) cuticle ()

(d) rectal gland ()

(4)

SECTION—B

(Marks : 15)

Write short notes on the following in not more than
5 to 8 sentences each : 3×5=15

1. Parthenogenesis

(5)

2. Fate maps

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(6)

3. Embryonic induction

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(7)

4. Complete metamorphosis

(8)

5. Teratogen

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(6th Semester)

ZOOLOGY

Paper : ZL-XI

(Parasitology and Immunology)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

The questions are of equal value

1. Describe the life cycle and pathogenicity of *Trypanosoma brucei*.

Or

Give a detailed account on the life cycle of *Plasmodium falciparum*.

2. Explain the life history, mode of infection and pathogenicity of *Echinococcus granulosus*.

Or

Give a detailed note on parasitic adaptations in cestodes.

3. Give an account of the parasitic adaptations in nematodes.

Or

Describe the life cycle and pathogenicity of *Schistosoma mansoni*.

4. What is innate immunity? How does it differ from acquired immunity?

Or

Write notes on hapten, epitope and interferon.

5. Explain the mechanism of antigen-antibody interactions.

Or

Describe the structure of typical antibody.

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(6th Semester)

ZOOLOGY

Paper : ZL-XI

(Parasitology and Immunology)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 5)

- 1.** Put a Tick (✓) mark against the correct answer in the corresponding brackets : 1×5=5

(a) Sand fly is the vector of the disease

(i) kala-azar ()

(ii) typhoid ()

(iii) Gambian fever ()

(iv) malaria ()

(2)

(b) Cysticercus larva of *Taenia solium* occurs in

(i) man ()

(ii) pig ()

(iii) sheep ()

(iv) snail ()

(c) Infective stage of *Ascaris* for humans is

(i) I stage juvenile ()

(ii) embryonated egg ()

(iii) II stage juvenile ()

(iv) fertilised egg ()

(3)

(d) Which of the following antibody classes is most abundant in the blood?

(i) IgM ()

(ii) IgA ()

(iii) IgG ()

(iv) IgE ()

(e) Type-I hypersensitive reaction is known as

(i) anaphylaxis ()

(ii) cytotoxic hypersensitivity ()

(iii) immune-complex hypersensitivity ()

(iv) delayed hypersensitivity ()

(4)

SECTION—B

(Marks : 15)

2. Write short notes on the following in 5 to 8 sentences each : 3×5=15

(a) Morphological types of *Leishmania*

(5)

(b) Taeniasis

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(6)

(c) Rhabditiform larva

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(7)

(d) Components of immune system

(8)

(e) Hypersensitivity

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(6th Semester)

ZOOLOGY

Paper : ZL-XII (A)

(**Biotechnology and Bioinformatics**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. Write an account of the principle and applications of PCR. 3+4=7

Or

Describe the process of genome sequencing. 7

2. Write an account of the concept of gene cloning. 7

Or

Point out the role of restriction enzymes and reporter gene in genetic engineering. $3\frac{1}{2}+3\frac{1}{2}=7$

3. Give a brief account of the applications of genetic engineering in medicine. 7

Or

What is gene therapy? Write the process and applications of gene therapy. 1+6=7

4. Write an account of basic operating systems. 7

Or

Write notes on the following : $3\frac{1}{2}+3\frac{1}{2}=7$

(a) Databases

(b) Role of bioinformatics

5. What is NCBI? Write a note on NCBI applications in database. 1+6=7

Or

Differentiate between genome and proteome databases. Give a brief overview of BLAST. 2+5=7

Subject Code : ZOO/VI/12 (a)

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(6th Semester)

ZOOLOGY

Paper : ZL-XII (A)

(Biotechnology and Bioinformatics)

(PART : A—OBJECTIVE)

(Marks : 20)

The figures in the margin indicate full marks for the questions

SECTION—A

(Marks : 5)

1. Put a Tick (✓) mark against the correct answer in the corresponding brackets : 1×5=5

(a) DNA fingerprinting relies on

- (i) difference in patterns of genes between individuals ()
- (ii) difference in order of genes between individuals ()
- (iii) difference in junk DNA patterns between individuals ()
- (iv) All of the above ()

(2)

(b) Which vector can be used to clone large DNA fragments?

(i) Yeast artificial chromosome (YAC) ()

(ii) Bacteriophage lambda ()

(iii) Plasmids ()

(iv) Cosmids ()

(c) Gene therapy is a technique to cure inherited diseases by

(i) repairing the faulty genes ()

(ii) introducing the correct copy of the gene ()

(iii) adding new copies of the gene ()

(iv) All of the above ()

(3)

(d) _____ is the activity of obtaining information resources relevant to an information from a collection of information resources.

(i) Database ()

(ii) Information retrieval ()

(iii) Web search engine ()

(iv) Public library ()

(e) European Molecular Biology Laboratory (EMBL) mainly deals with

(i) genome sequence ()

(ii) protein sequence ()

(iii) nucleotide sequence ()

(iv) amino acid sequence ()

(4)

SECTION—B

(Marks : 15)

2. Write short notes on the following in 5 to 8 sentences each : 3×5=15

(a) Southern blotting

(5)

(b) DNA ligase

(6)

(c) Gene library

(7)

(d) Internet for biologists

(8)

(e) Internet tools

2 0 1 6

(6th Semester)

ZOOLOGY

Paper : ZL-XII (B)

(**Animal Ecology and Wildlife**)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(Marks : 35)

*The figures in the margin indicate full marks
for the questions*

1. Write the concept of ecology. Explain in brief the different types of ecosystem. 2+5=7

Or

What are ecological pyramids? Describe the different types of ecological pyramids. 1+6=7

2. Describe the detailed steps involved in hydrological cycle. 7

Or

What are the three subdivisions of the biosphere? Write a short note on nitrogen fixation. 3+4=7

3. Explain Shelford's law of tolerance. 7

Or

Write notes on the following : 3½+3½=7

- (a) Global warming
(b) Significance of succession

4. Explain the population growth curve. Add a note on natality. 5+2=7

Or

Explain the different types of species diversity. 7

5. Describe the different methods of wildlife management. 7

Or

Write a note on the international and national programmes / organisations which are involved in wildlife conservation. 7

Subject Code : ZOO/VI/12 (b)

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(6th Semester)

ZOOLOGY

Paper : ZL-XII (B)

(Animal Ecology and Wildlife)

(PART : A—OBJECTIVE)

(Marks : 20)

SECTION—A

(Marks : 5)

Each question carries 1 mark

Put a Tick (✓) mark against the correct answer in the corresponding brackets :

1. The branch of ecology which is concerned with the study of an individual organism is called

(a) synecology ()

(b) autecology ()

(c) human ecology ()

(d) system ecology ()

(2)

2. The ozone layer absorbs or blocks

- (a) short-wave ultraviolet radiation ()
- (b) long-wave ultraviolet radiation ()
- (c) medium-wave ultraviolet radiation ()
- (d) None of the above ()

3. The community on rock is called

- (a) hydrosere ()
- (b) lithosere ()
- (c) psammosere ()
- (d) halosere ()

(3)

4. When a population is allowed to grow in a limited environment, it shows

(a) exponential growth ()

(b) geometric growth ()

(c) logistic growth ()

(d) None of the above ()

5. Deforestation causes

(a) soil erosion ()

(b) desertification ()

(c) loss of nutrients ()

(d) All of the above ()

(4)

SECTION—B

(Marks : 15)

Each question carries 3 marks

Write short notes on the following :

1. Interspecific interactions

(5)

2. Carbon cycle

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(6)

3. Greenhouse effect

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(7)

4. Species richness

(8)

5. Biodiversity conservation in India
