

2020

ZOOLOGY — HONOURS

Fifth Paper

(Unit - I)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer **question no. 1** and **any two** questions from the rest.

1. Answer **any two** questions : 10×2
- (a) What is Philadelphia chromosome?
 - (b) Define APC / cyclosome.
 - (c) State the use of SDS in SDS-PAGE.
 - (d) Why P53 is regarded as tumour-suppressor gene?
 - (e) Distinguish Taq DNA polymerase and DNA polymerase-I.
 - (f) What are 'chi sites'?
 - (g) Comment on the function of RecA.
 - (h) What is Cooley's Anemia?
2. Write short notes on (**any two**) : 7½×2
- (a) Western Blot
 - (b) Expression vector
 - (c) Genetic cause of Thalassemia
 - (d) Histone acetylation
 - (e) LINE and SINE
 - (f) Genomic DNA Library.
3. (a) Define restriction endonuclease.
- (b) What are 'iso-schizomer' and 'neo-schizomer'?
- (c) Explain the process and utility of 'Colony hybridization' process in RDT (Recombinant DNA Technology). 3+(3+3)+(5+1)

Please Turn Over

4. (a) Delineate any one process of conversion of proto-oncogene to oncogene.
(b) Explain the extrinsic pathway of apoptosis.
(c) State two important properties of transformed cells. 6+6+3
5. (a) Briefly describe the principle, procedure and application of affinity chromatography.
(b) Explain with suitable diagram, the process of homopolymer tailing and its significance. (3+3+3)+(5+1)
6. (a) Explain the principle of electrophoresis.
(b) State the characteristic features of IS element with diagram.
(c) How does TGE induce 'Inversion'?
(d) State the characteristic features of Ty element. 3+(3+2)+4+3
7. (a) Describe the basic steps of PCR with suitable diagram (allele specific).
(b) Explain catebolite repression with reference to lac operon.
(c) 'O^c' mutation is epistatic but I^s hypostatic. – Explain. (5+3)+4+3
8. (a) Explain with suitable diagram DNA damage checkpoint in eukaryotes.
(b) Explain how sickle cell anemia and sickle cell trait can be distinguished experimentally.
(c) What is transpositional recombination? 6+5+4
-

2020

ZOOLOGY — HONOURS

Fifth Paper

(Unit - II)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer **any two** questions from the following : 10×2
- (a) What is γ -globulin? State its importance.
 - (b) Distinguish between Amastigote and Promastigote forms of *Leishmania donovani*.
 - (c) State the cause of chill and rigour in Malaria.
 - (d) State differences between gram positive and gram negative bacteria.
 - (e) Write structural features of IgM and IgG.
 - (f) What is opsonisation?
 - (g) What is PKDL? Mention its symptoms.
 - (h) What do you mean by Humoral immunity?

Group - A

Answer **any one** question from the following.

2. (a) Discuss the Life cycle of *Plasmodium vivax* in mosquito with a schematic diagram. What is signet ring stage? 6+3+6
- (b) Discuss the transmission and control measures of *Ascaris lumbricoides*.
3. (a) Discuss the morphology and importance of Cercaria in *Fasciola hepatica*. 7+4+4
- (b) Distinguish among Carrier, Vector and Host.
- (c) State the stages of development of *Wuchereria bancrofti* in mosquito.
4. Write on the following (**any three**) : 5×3
- (a) Hypnozoites and Haemozoin.
 - (b) Phases of bacterial growth.
 - (c) Sterilization and pasteurization.

Please Turn Over

- (d) Rhabditiform larva.
- (e) Parasitism and Commensalism.
- (f) Parasitic adaptations of helminth parasites.

5. Write short notes on *any two* of the following :

7½×2

- (a) Vector potentiality of *Anopheles culicifacies*.
- (b) Life cycle and pathogenicity of *Shigella* sp.
- (c) Encystation and excystation of *Entamoeba histolytica*.
- (d) Classification of bacteria on the basis of staining and its importance.

Group - B

Answer *any one* question from the following.

6. Write short notes on (*any two*) :

7½×2

- (a) Activation and differentiation of B-cell.
- (b) Structure of a typical Antibody molecule.
- (c) Macrophage and its function.
- (d) Innate Immunity in Invertebrates.

7. (a) What is ADCC? Discuss in brief the ADCC in man.

- (b) Discuss how exogenous and endogenous Antigens are processed and presented to the Immune system.

2+6+7

8. (a) Distinguish between T_H and T_{cyt} cells.

- (b) State the importances of : (i) TNF (ii) IFN-γ (iii) Adjuvants.

3+3+9

9. Write on the following (*any three*) :

5×3

- (a) Complements and its function.
 - (b) Properties and function of Cytokines.
 - (c) Role of HAT medium in monoclonal antibody production.
 - (d) Bursa of Fabricius and its function.
 - (e) Cell mediated immunity in molluscs.
 - (f) Structures of MHC 1 and MHC 2 with suitable diagram.
-