VIVEKANANDA COLLEGE, TIRUVEDAKAM WEST
(Autonomous & Residential)
[Affiliated to Madurai Kamaraj University]
M.Sc. Zoology Degree (Semester) Examinations, April 2015
Part – III : Core Subject : Second Semester : Paper – I

IMMUNOLOGY
Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. Compare and contrast epitope and paratope.
2. Differentiate the idiotype immunoglobulins from allotype.
3. How do the complement system activated?
4. What is class switching mechanism?
5. Classify the tumor antigens.
6. How are autoimmune diseases treated?
7. Illustrate the role of NK cells during protozoan infections.
8. How are the disease causing intracellular microbes killed?
9. Mention the principle of VDRL test.
10. How does ELISA test helpful in disease diagnosis?

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Describe the basic structure of IgG with its properties.

(OR)

b) How are diverse antibodies produced?

12. a) Discuss the classical pathway of complement system.

(OR)

b) Comment on the mechanism of Type III hypersensitivity reaction with few examples.

13. a) How is kidney transplantation carried out?

(OR)

b) Write about the clinical and immunological consequences of AIDS.

14. a) Give an account of TB infection and immunity.

(OR)

b) How do the B cells play a vital role in helminth infection?

15. a) Compare and contrast immunodiffusion and immunoelectrophoresis.

(OR)

b) Write about the radioimmune assay of insulin.

SECTION – C

Answer any THREE Questions : **(3 × 10 = 30)**

16. Give a detailed account of role of the biological system in immunogenicity.
17. Discuss the mechanism of cell mediated immunity. Add a note on the role of T cell subsets.
18. How does the immune system elicit response to tumors? Add notes on surveillance and immunotherapy.
19. Write an essay on viral infection and immunity.
20. Write detailed notes on the principle and working mechanism of ELISA, RIA and VDRL.

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M.Sc. Zoology Degree (Semester) Examinations, April 2015
Part – III : Core Subject : Second Semester : Paper – II

BIO-STATISTICS

Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. SPSS Package.
2. Bionominal distribution.
3. Null hypothesis.
4. Degree of freedom.
5. Scatter diagram.
6. 'r' value.
7. F – ratio.
8. One way ANOVA.
9. Fertility rate.
10. Demography.

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Analyse various constituents of a table.

(OR)

b) Explain the addition theorem and multiplication theorem of probability.

12. a) Analyse the merits and demerits of random sampling.

(OR)

b) What is meant by Student 't' test? Mention its applications.

13. a) Analyse different types of regression analysis.

(OR)

b) Calculate the coefficient of correlation between X and Y for the values given below:

X	2	5	7	9	19	17
Y	25	27	26	29	34	35

14. a) Write a critical account on two factor analysis of variance and its applications.

(OR)

b) Define F-distribution and mention its applications.

15. a) Evaluate the uses of vital statistics.

(OR)

b) Explain the construction method and applications of life table.

SECTION – C

Answer any THREE Questions : (3 × 10 = 30)

16. When two heterozygous pea plants are crossed, 1600 plants are produced in the F_2 generation, out of 940 are yellow round, 260 are yellow wrinkled, 340 are green round and 60 are green wrinkled. By means of chi-square test whether these values are deviated from Mendel's dihybrid ratio 9:3:3:1 (5% value of chi-square for 3 df = 7.81).

17. Analyse various types of non-probability sampling methods.

18. From the following data of yield of tomato and potato in 5 places, find out the two regression equations. What is the probable yield of potato when the yield of tomato happens to be 150kg?

Tomato X	60	20	10	40	80
Potato Y	90	60	50	80	120

19. A certain manure was used on four plots of land A, B, C & D. Four beds were prepared in each plot and the manure was used. The out put of the crop in the beds of plot A,B,C,D in given below:

A	B	C	D
6	15	9	8
8	10	3	12
10	4	7	1
8	7	1	3

Using ANOVA find out whether the difference in the means of production of crops of plots is significant / not (table value of F for $n_1 = 3$ and $n_2 = 12$ at 5% level of significance = 3.49)

20. Analyse various demographic characteristics of India.

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M.Sc. Zoology Degree (Semester) Examinations, April 2015
Part – III : Core Subject : Second Semester : Paper – III

DEVELOPMENTAL BIOLOGY
Under CBCS – Credit 4

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. Spermatozoon.
2. Cleidoic egg.
3. Morula.
4. Extra embryonic membranes.
5. Properties of organizer.
6. Homoplastic transplantation.
7. Cytodifferentiation.
8. Stem cell.
9. Epimorphosis.
10. Metamorphosis.

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Explain briefly the fertilizin and anti-fertilizin reactions.

(OR)

b) Write short notes on the parthenogenesis.

12. a) Describe briefly the various planes of cleavage.

(OR)

b) Give a brief account on the salient features of gastrulation.

13. a) Explain briefly the gradient theory.

(OR)

b) Write briefly about the organizer.

14. a) Give a brief account on the characteristics of differentiation.

(OR)

b) Describe briefly the molecular basis of differentiation.

15. a) Write an account on the formation of blastema in regeneration.

(OR)

b) Explain briefly the hormonal control of amphibian metamorphosis.

SECTION – C

Answer any THREE Questions : **(3 × 10 = 30)**

16. Discuss in detail the spermiogenesis.
17. Analyse in detail the teratogenesis.
18. Discuss in detail the nuclear transplantation experiment.
19. Give an account on the role of cytoplasm on differentiation.
20. Explain in detail the physiological and bio-chemical changes during amphibian metamorphosis.

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M.Sc. Zoology Degree (Semester) Examinations, April 2015
Part – III : Elective Subject : Second Semester : Paper – I

EVOLUTION
Under CBCS – Credit 5

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. Inter specific struggle.
2. Heritalile variations.
3. Orthologous genes.
4. Neutral alleles.
5. Sympatric speciation.
6. Sibling species.
7. Higher Taxa.
8. Extinction.
9. Altruism.
10. Kin selection.

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Explain Darwinian fitness.

(OR)

b) Substantiate the Role of Genetic drift in Evolution.

12. a) What do you infer from "Molecular clock of Evolution"?

(OR)

b) Explain DNA – Phylogeny.

13. a) Give an account on Phyletic speciation.

(OR)

b) Give an account on Allopatric speciation.

14. a) Enumerate the patterns of origin of Higher categories.

(OR)

b) Explain the Causes of Extinction.

15. a) Analyse cultural Evolution of man.

(OR)

b) Describe the Neandarthal man.

SECTION – C

Answer any THREE Questions : **(3 × 10 = 30)**

16. Explain the Modes and Types of Selection.
17. Give a detailed account on "Molecular Evolution".
18. Explore the types of Isolating mechanisms as evolutionary forces.
19. Discuss the Mechanism of origin of Higher categories.
20. Explain the Trends in Human Evolution.

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M.Sc. Zoology Degree (Semester) Examinations, April 2015
Part – III : Core Subject : Fourth Semester : Paper – I

APPLIED BIOTECHNOLOGY
Under CBCS – Credit 5

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. Methods of Gene Therapy.
2. Fore Skin.
3. Gift.
4. Electro Fusion.
5. Germplasm Storage.
6. Phosphate Biofertilizers.
7. Nanobiotechnology.
8. Target.
9. B_{20} and B_{100}.
10. Biomining.

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Give an outline of molecular analysis of Human diseases.

(OR)

b) What do you mean by Gene therapy?

12. a) Explain the methods of microinjection and Electroporation.

(OR)

b) Bring out the importance of Embryonic stem cells.

13. a) Describe the role of Bioinsecticides.

(OR)

b) How do Biofertilizers improve Soil fertility?

14. a) Bring out the scope of nanobiotechnology.

(OR)

b) List out the characters of nanoparticles.

15. a) Explain oil recovery.

(OR)

b) Describe biogas production.

SECTION – C

Answer any THREE Questions : **(3 × 10 = 30)**

16. What are biomaterials? Explain their types and application.
17. Explain cloning by nuclear tranfer.
18. Discuss the methods of Plant cell and Tissue culture.
19. How do nanobiotechnology applied in Medicine?
20. What is Bioremediation? Explain the remedial methods.

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Part – III : Core Subject : Fourth Semester : Paper – II

ENVIRONMENTAL BIOLOGY
Under CBCS – Credit 5

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. Food web.
2. Leibigs law.
3. Ecotone.
4. Ecological niche.
5. Soil erosion.
6. Xenobiotics.
7. Radioactive fall out.
8. Space ecology.
9. MAB.
10. Environmental agencies.

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Write about the Ecological pyramids.

(OR)

b) Explain about Food chain.

12. a) Critically analyse about remote sensing.

(OR)

b) Give a brief account on bioindicators.

13. a) Write short notes on radioactive pollution.

(OR)

b) List out the toxicants of public health hazard.

14. a) Write short notes on life support sytem.

(OR)

b) Give a brief account on population regulation.

15. a) Write about the environmental education programme.

(OR)

b) Give a brief account on pollution control board.

SECTION – C

Answer any THREE Questions : **(3 × 10 = 30)**

16. Write an essay on energy flow.
17. Describe a detail account on ecological succession.
18. Write an essay on rain water harvesting.
19. Discuss in detail about population ecology of man.
20. Write an essay on wild life conservation and management.

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Part – III : Elective Subject : Fourth Semester : Paper – I

BIO-FARMING TECHNOLOGY
Under CBCS – Credit 5

Time: **3** Hours Max. Marks: **75**

SECTION – A

Answer ALL Questions : **(10 × 2 = 20)**

1. Voltinism.
2. Mountage.
3. Bedding material.
4. Organic farming.
5. Induced spawning.
6. Pisciculture.
7. White revolution.
8. Indian breeds.
9. Ranikhet disease.
10. Swarming.

SECTION – B

Answer ALL Questions : **(5 × 5 = 25)**

11. a) Describe the morphology of mulberry silkworm.

(OR)

b) Write a brief account on moriculture.

12. a) Explain the method of windrow vermicomposting.

(OR)

b) Write the preparation of vermiwash.

13. a) List out the characteristics of culturable fishes.

(OR)

b) Describe the biology of carp.

14. a) Comment on Jersey.

(OR)

b) Explain the feeding management of milk cow.

15. a) Explain briefly the rearing of broilers.

(OR)

b) Write the nutritive value of honey.

SECTION – C

Answer any THREE Questions : **(3 × 10 = 30)**

16. Explain in detail the rearing of silkworm.
17. Vermicompost increase the fertility of soil – justify.
18. Describe the morphology and economic importance of ornamental fishes.
19. Discuss the preparation of dairy products and their economic values.
20. Give a detailed account on Newton hive.

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