

Day : Tuesday

Date : 13/10/2015



Time : 02.00 PM TO 05.00 PM

Max Marks : 80    Total Pages : 1

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Draw neat diagrams **WHEREVER** necessary.
- 4) Both the sections should be written in **SEPARATE** answer books.

**SECTION-I**

- Q.1** A) Attempt any **ONE** of the following: (06)
- i) Give classification of algae according to G. M. Smith.
  - ii) Explain the concept of binomial nomenclature system in angiosperms.
- B) Attempt any **TWO** of the following: (10)
- i) Describe different forms of lichen.
  - ii) Describe external and internal structure of *Riccia* thallus.
  - iii) Explain diversity in plants with respect to mode of nutrition and life span.
- Q.2** Write short notes on any **FOUR** of the following: (16)
- a) Distinguish between monocot and dicot plant.
  - b) Give structure of strobilus in *Selaginella*.
  - c) Give general characteristics of angiosperms.
  - d) Describe structure and functions of typical leaf.
  - e) Give outline of life cycle of *Aspergillus*.
  - f) Give biotechnological significance of Algae.

**SECTION-II**

- Q.3** A) Attempt any **ONE** of the following: (06)
- i) Define flower and give structure of typical flower.
  - ii) Define fruit and give major types of fruit.
- B) Attempt any **TWO** of the following: (10)
- i) Describe types and functions of plant tissues.
  - ii) Explain the concept of seed dormancy.
  - iii) Give types of endosperms in angiosperms.
- Q.4** Attempt any **FOUR** of the following: (16)
- a) Explain fertilization in angiosperms.
  - b) Give systematic position of *Pinus*.
  - c) What is photosynthesis? Give its significance.
  - d) Give biotechnological significance of gymnosperms.
  - e) Describe symbiotic nitrogen fixation.
  - f) Give the significance of inflorescence.
- Q.5** Write short notes on any **FOUR** of the following: (16)
- a) Role of mineral elements in plants
  - b) Polyembryony
  - c) Auxins
  - d) Structure of dicot seed
  - e) Wood identification
  - f) Cyathium inflorescence

## Subject : Zoology

Day : Wednesday

Date : 14/10/2015



25558

Time : 02.00 PM TO 05.00 PM

Max Marks : 80 Total Pages : 1

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Neat labelled diagrams should be drawn **WHEREVER** necessary.
- 4) Both the sections should be written in the **SEPARATE** answer book.

**SECTION-I**

- Q.1**    **A)** Attempt **ANY ONE** of the following (06)  
           **i)** Describe the life cycle of *Plasmodium vivax* in mosquito  
           **ii)** Describe the structure of *Taenia solium*.
- B)** Attempt **ANY TWO** of the following (10)  
           **i)** Describe the Islet's of Langerhan's and add note on role of insulin and glucagon.  
           **ii)** Describe physiology of digestion in stomach and intestine.  
           **iii)** Describe external morphology of *Ascaris*.
- Q.2**            Write note on **ANY FOUR** of the following (16)  
           **i)** Describe in brief digestive system of earthworm.  
           **ii)** Describe external morphology of earthworm.  
           **iii)** Describe female reproductive system of earthworm.  
           **iv)** Describe five kingdom approach of classification.  
           **v)** Describe conjugation in paramecium.  
           **vi)** Describe external morphology of paramecium.

**SECTION-II**

- Q.3**    **A)** Attempt **ANY ONE** of the following (06)  
           **i)** Describe digestive system of rat.  
           **ii)** Describe internal structure of heart of rat.
- B)** Attempt **ANY TWO** of the following (10)  
           **i)** Describe in brief respiratory system in rat.  
           **ii)** Describe the structure of nephron in rat.  
           **iii)** Give an account of male reproductive system of rat.
- Q.4**            Write note on **ANY FOUR** of the following (16)  
           **i)** Describe the role of oestrogen and progesterone.  
           **ii)** Explain the hormones of posterior lobe of pituitary gland.  
           **iii)** What is ACTH? Explain its role.  
           **iv)** Explain vermicompost as a biofertilizer.  
           **v)** Explain the duties of worker bees.  
           **vi)** Describe in brief Bee Pollination.
- Q.5**            Write note on **ANY FOUR** of the following (16)  
           **i)** Describe Tassar and mulberry silk.  
           **ii)** Explain the economic importance of fish.  
           **iii)** Explain uses of royal jelly and bee venom.  
           **iv)** Describe the types of fowls in poultry industry.  
           **v)** What is fish preservation? Explain any two methods of fish preservation.

## Subject : Biophysical Chemistry

Day : Thursday

Date : 15/10/2015



Time : 02.00 PM TO 05.00 PM

Max Marks : 80 Total Pages : 1

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Draw diagrams or structures **WHEREVER** necessary.

**SECTION-I**

- Q.1** A) Attempt any **ONE** of the following: (06)
- i) Explain the role of lungs and kidneys in pH regulation.
  - ii) Define half-life of a radioactive element. Elaborate on the applications of radioactive isotopes in medicine.
- B) Attempt any **TWO** of the following: (10)
- i) Discuss the various forces stabilizing molecular structure with suitable examples.
  - ii) Explain Donnan Membrane equilibrium and its biological significance.
  - iii) Write a note on the lowering of vapour pressure.
- Q.2** Write short notes on any **FOUR** of the following: (16)
- i) Biosensors
  - ii) Water as a universal solvent
  - iii) Second law of thermodynamics
  - iv) Plasma membrane
  - v) Osmotic pressure

**SECTION-II**

- Q.3** A) Attempt any **ONE** of the following: (06)
- i) What are photosystems? Discuss their role in photosynthesis.
  - ii) Explain the phenomenon of ultrafiltration and the mechanism involved in dialysis.
- B) Attempt any **TWO** of the following: (10)
- i) What are colloids? Classify and explain their properties.
  - ii) Define free radicals and describe how they cause damage at the molecular level.
  - iii) What is electrolytic conductance? Explain the factors affecting conductance.
- Q.4** Write short notes on any **FOUR** of the following: (16)
- i) Gas laws
  - ii) Radioactivity counters
  - iii) Biological buffers
  - iv) Significance of Gibb's free energy
  - v) Hydrophilic and hydrophobic interactions in biological systems
- Q.5** Attempt any **EIGHT** of the following: (16)
- i) Define zwitter ions. Give two examples.
  - ii) What are weak acids? Comment on their dissociation.
  - iii) Why is a pH meter preferred over pH paper for determining pH?
  - iv) What are buffers? Give two examples of biological buffers.
  - v) What is Brownian motion?
  - vi) Define redox potential. Give its significance in biological systems.
  - vii) What are bio-surfactants? List some of their applications.
  - viii) Illustrate ester and carboxylic acid functionalities and give their biological significance?
  - ix) Differentiate between osmosis and diffusion.