

S. N. KANSAGRA SCHOOL
BIOLOGY (THEORY)
Final examination 2009-2010

STD11

(Three hours)

Answer **all** questions from Part I.

Part II is subjective section. Section A has four questions you may choose **any two** from question 2,3 and 4. **Question 5 is compulsory**. Section B has four questions you may choose **any two** from question 6, 7 and 8. **Question 9 is compulsory**.

The intended marks for questions or parts of questions are given in brackets.

Part I (20 marks)

Answer all questions

Question 1

a) Mention one significant difference between each of the following:

5

- i) Phytoplankton and Zooplankton.
- ii) Amphipathy and Amphotery
- iii) Lyases and Ligases
- iv) Gene cloning and Cell cloning
- v) Proenzymes and Isozymes

b) Answer the following:

4

- i) Name the two bile salts.
- ii) What is the diameter of DNA and the length of the hydrogen bonds in the DNA model?
- iii) Most antibiotics that kill gram positive bacteria do not harm the gram negative bacteria. Give reason.
- iv) Plasmodial slime mould has character common to both plants and animals. Mention one for each.

c) Give the scientific name of the following:

2

- i) Butterfly
- ii) Grasshopper
- iii) Lungfish
- iv) Cuckoo

d) Give the causative agent of the following:

1

- i) Ear rot of wheat
- ii) Red rust disease in tea

e) Give the contribution of the following scientists. 2

- i) R. Franklin and M.H.F. Wilkins
- ii) Edward Buchner
- iii) Lohmann
- iv) F.H.C. Crick

f) Answer the following- 4

- i) Bacterial cell under ideal conditions divides every 20- 30 minutes. This can run into billions in 24 hours. However, this does not happen practically. Give reason.
- ii) The peristome of bryophytes is hygroscopic. Explain.
- iii) How can you differentiate the anterior end of an earthworm from its posterior end?
- iv) An alga that sailors fear the most _____
- v) Venation in fern is _____

g) Give the location of - 2

- i) Epitheca
- ii) Capillitia
- iii) Synergids
- iv) Apophysis

Part II (50 marks)

Section A

Answer any two questions

Question 2

- a) What do you mean by the term haemocoel? Explain with the help of an example the type of circulation exhibited by animals with haemocoel. Name the phylum and state two characters. 4
- b) With the help of a diagram show the dependence of the sporophyte to the gametophyte in pteridophytes. 2
- c) Name the phylum that includes animals with calcareous endoskeleton and exoskeleton. Specify by mentioning the classes and examples. 4

Question 3

- a) Describe the stages in life of a sporozoan that sexually matures in a mosquito. 4
- b) Draw the dorsal view of the brain of frog. 2

- c) All vertebrates have a well developed endocrine system. Most invertebrates show certain endocrine secretions. However a particular phylum includes animals that have endocrine glands with hormones for specific function. Mention the phylum and discuss the hormones and their effect. 2
- d) Draw the structure of embryo sac in Angiosperms. 2

Question 4

- a) In bacteria, typical sexual reproduction is absent, however, conjugation, transduction and transformation are considered as methods of sexual reproduction. Analyze and comment on the given statement. Describe the process of transduction with relation to this. 4
- b) Organ system level of organization begins from which phylum? Give example and state two characters related to its system. 2
- c) All plants have a special organelle with a pigment that helps them to be the producers. Comment on this pigment and its various forms across the plant kingdom. 4

SECTION A. (COMPULSORY QUESTION)

Question 5

- a) In frog, blood entering both the auricles is oxygenated. Is this true? Justify your answer. 2
- b) Life originated in water and moved to land. Discuss this with relation to animal kingdom and plant kingdom. 3

SECTION B

Answer any two questions

Question 6

- a) A proton gradient is formed in the inter-membrane space of mitochondria. How does this help in cellular respiration? 2
- b) What are steroids? Discuss their physiological role. 3
- c) What is the function of peptidyl synthetase? Discuss its significance. 3
- d) Show with the help of diagrams the semi-conservative model of replication. 2

Question 7

- a) What are amino acids? Give their basic structure. Show the formation of a dipeptide. 4
- b) Energy carrier and energy store house is essential for a cell. ATP fits perfectly in this role. Explain. 1
- c) Differentiate between competitive inhibition and allosteric inhibition. 2
- d) Comment on the importance of Chargaff's contribution to the model of DNA by Watson and Crick. 3

Question 8

- a) Genetic engineering is a promising field for various reasons, however it also possess certain threats. Discuss at least three threats that it can cause. 3
- b) List the main enzymes required for DNA replication with their function. 3
- c) Give a brief review of what happens to the carbon atoms of glucose after it enters a cell for respiration. 2
- d) Discuss induction in relation to gene expression. 2

SECTION B (COMPULSORY QUESTION)**Question 9**

- a) Cellulose and starch are polysaccharides in plants. However they differ highly in their location and function. Give reason. 3
- b) A primer is required for DNA replication but not for protein synthesis. Explain the significance of a primer. 2