

S. N. KANSAGRA SCHOOL
BIOLOGY (THEORY)
Terminal examination 2010-2011

STD11

(Three hours)

Answer all questions from Part I.

Part II is subjective section. Section A has five questions you may choose **any three** from them.

Section B has four questions you may choose **any two** from them

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

Part I

Answer all questions

Question 1

a) Mention one significant difference between each of the following: [5]

- i. Albumin and Globulin
- ii. Taxonomy and Systematics
- iii. Enzymes and Co-enzymes
- iv. Sporozoa and Sarcodina
- v. Megasporangium and Microsporangium

b) Give one word for the following: [2]

- i. A phenotype due to two or more additive genes.
- ii. Modifier site in an enzyme
- iii. Haploid cells in plants that do not undergo cell division
- iv. The zone of integration of two communities

c) Give reason for the following: [5]

- i. RQ of organic acids is more than one.
- ii. Amino acids show amphoteric property.
- iii. Mendel was unaware of the phenomenon of linkage.
- iv. Bryophytes are called amphibians of plant kingdom.
- v. Phylogenetic classifications are more advanced than natural classification.

d) Mention the location and function of the following: [3]

- i. Diplosome

- ii. Pyrenoid
- iii. Glycocalyx

e) Give the contribution of the following scientists.

[2]

- i. Arthur Tansley
- ii. Christine de Duve
- iii. Emil Fisher
- iv. Babara McClintok

f) Give the ploidy level of the following:

[3]

- i. Meristem cell of monocot
- ii. Integument
- iii. Prothallus
- iv. Primary endosperm nucleus in dicots
- v. Megasporophyll
- vi. Gemma cell in Marchantia

Part II
Section A
Answer any three questions

Question 2

- a) Walruses can survive severe cold conditions. Presence of which structure helps them in this? What is main constituent of this structure? Give other importance of this substance. [3]
- b) With the help of well labeled diagrams the stages of homotypic division in a germ cell that originally had 3 pairs of chromosomes. [4]
- c) Draw a nucleotide mark the area of the glycosidic bond in it. Show the formation of this bond in milk sugar. [3]

Question 3

- a) With the help of a diagram show the different methods of transport across cell membrane. [4]
- b) The Platty Puss is a jungle cat that has either yellow or the recessive purple fur. Tufted ears are dominant to plain ears. In an investigation a Puss with yellow fur and plain ears was crossed with a Puss with purple fur and tufted ears. The total from several groups of offspring were
3 Yellow fur, tufted ears
4 Purple fur, tufted ears

3 Yellow fur, plain ears

4 Purple fur, plain ears

Deduce the genotypes of the parent Pusses.

[2]

c) Write the chemical equation catalyzed by following enzymes in cellular respiration

[2]

- a) mutase
- b) succinate dehydrogenase

d) Bring out the difference between prokaryotic chromosomes and eukaryotic chromosome.

[2]

Question 4

a) All biological membranes are referred to as “Fluid mosaic model”. Give reason.

[2]

b) Compartmentalization is important for multicellular life. Explain.

[2]

c) Discuss the importance of pores in the nuclear membrane.

[2]

d) A zookeeper had two male Dandy lions. He mated the one with yellow legs and a green tail to a female that had pink legs and red tail. All the Dandy cubs had yellow legs and green tails. The other male had pink legs and green tail and he mated this to a female that was genetically identical to the first one. Their cubs all had pink legs and green tails. He knew that the males were both homozygous.

Deduce the genotypes of the parent Dandy Lions and the cubs in the two litters.

[4]

Question 5

a) Sickle cell anaemia is caused due to change in one amino acid. What type of mutation is this? Discuss this type of mutation.

[3]

b) Why does anaerobic respiration produce less energy than aerobic respiration? Give the commercial importance of anaerobic respiration.

[4]

c) Cyanide is a poison that stops cellular respiration. Comment on the action of these poisons.

[3]

Question 6

a) Given below is a sequence on the mRNA

AUG AAU CGC UCC UUU CAG ACC UAA

Prepare the DNA double helix strand of this.

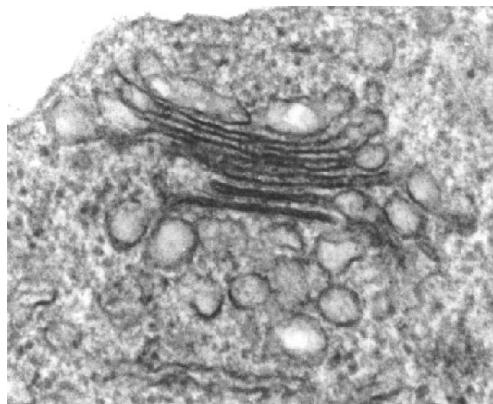
[2]

b) Name the main monomers present in the following-

[3]

- a. Haemoglobin
- b. Keratin
- c. Butter
- d. Biological membrane
- e. Wax

- f. Plant cell wall
- c) Identify, draw and label the given structure [3]



- d) What is oxidative phosphorylation? Why is it an important step in cellular respiration? [2]

SECTION B

Answer any two questions

Question 7

- a) Draw a well labeled diagram of prokaryotic cell and locate any four structures that are not present in eukaryotic cell. [3]
- b) How is camouflage different from mimicry? Explain giving suitable examples. [3]
- c) Light is important in pond stratification. Discuss the statement. [2]
- d) Mention two merits and two demerits of Linnaeus classification. [2]

Question 8

- a) What happens when floating plant species invade during hydrarch succession? [3]
- b) Mention the role of the following [2]
- Heterocyst
 - Akinetes
- c) Chemicals are an important form of communication in animals. Explain [2]
- d) When and where does reduction division take place in the life cycle of [3]
- Moss
 - Fern
 - Gymnosperm

Question 9

- a) Explain the symbiotic relationship of the fungi with the following by giving suitable examples [3]
- Algae
 - Angiosperms
 - Gymnosperms
- b) Construct a food web with the given information taking care of the trophic levels [3]
- Grass and Christmas bush - eaten by grasshopper.
 - Christmas bush- eaten by praying mantis and herbivorous bug.
 - Moth- eaten by Praying Mantis and Spider.
 - Grasshopper – eaten by Praying Mantis, Lizard, Grey Kestrel and Predaory bug.
 - Predatory bug preys on herbivorous bug and is preyed upon by Praying Mantis, Lizard and Grey Kestrel.
 - Grey Kestrel eats lizard.
- c) Diagrammatically show the alternation of generation in vascular cryptogams. [4]

Question 10

- a) Explain the life cycle of plasmodium in terms of three different phases. [3]
- b) Only 10% of energy is transferred from one trophic level to the next. What happens to the remaining energy? [2]
- c) With the help of chart mention the different types of Monerans based on their shape. [2]
- d) Differentiate between [3]
- Septate and aseptate fungi
 - Ascocarp and basidiocarp
 - Coenozygote and zygospore