



BK BIRLA CENTRE FOR EDUCATION
SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL



MID-TERM EXAMINATION 2023-24

BIOLOGY (044)

Class : XI

Date : 20.09.23

MARKING SCHEME

Duration : 3 Hrs

Max. Marks : 70

Section–A

1. c..... 1mark
2. a..... 1 mark
3. c..... 1 mark
4. a..... 1 mark
5. d..... 1 mark
6. a..... 1 mark
7. d..... 1 mark
8. a..... 1 mark
9. c..... 1 mark
10. c..... 1 mark
11. b..... 1 mark
12. d..... 1 mark
13. a..... 1 mark
14. b..... 1 mark
15. b..... 1 mark
16. a..... 1 mark

Section–B

17. Ans: Whittaker proposed an elaborate five kingdom classification – Monera, Protista, Fungi, Plantae and Animalia. The main criteria of the five-kingdom classification were cell structure, body organisation, mode of nutrition and reproduction, and phylogenetic relationships.1 + 1= 2 marks
18. Ans: a. The photosynthetic pigments present in green algae are chlorophyll a and chlorophyll b.
b. The photosynthetic pigments present in red algae are phycoerythrin and phycocyanin. The photosynthetic pigments present in brown algae are fucoxanthin and chlorophyll c.
c. The alga from which Agar is extracted is Gelidium.
d. Two hydrocolloid substances extracted from red and brown algae are agar and carrageenan.
.....½ x 4 = 2 marks
19. Ans: Metamerism is the repetition of homologous body segments. This type of development can be seen in the Annelids, which include earthworms, leeches, tubeworms, and their relatives.2 marks
20. Ans: a} **Unisexual flowers**
A flower which has either the male or female reproductive organs in separate flowers. Example: Papaya, watermelon, etc.

a) Bisexual Flowers

A flower which has both male and female reproductive organs in separate flowers. Example: Rose, China rose, etc.

b) Actinomorphic Flower

They include radially symmetrical flowers.

It is a basal character of angiosperm.

Two identical sections are obtained along any plane.

Their floral parts are equal in size.

They are termed regular flowers.

Examples – Mustard, chilli.

Zygomorphic Flower

They include bilaterally symmetrical flowers.

It is a derived character.

Two identical sections are obtained in a single vertical plane.

Their floral parts are usually unequal.

They are irregular flowers.

Examples – Pea, Cassia, Bean.1+ 1= 2marks

21. Ans: Those tissues that are made up of structurally different types of cells that are involved in the related functions are called complex tissues. Xylem and phloem are the complex tissues. Xylem is made up of vessels, tracheids, xylem parenchyma, and xylem fibres.1 + 1 = 2 marks

OR

The epidermal tissue system consists of the epidermis, stomata, cuticle and the epidermal appendages like root hair and trichomes (stem hair).2 marks

Section– C

22. Ans: Taxonomy is a branch of Biology that refers to the process of classifying different living species. A taxon is referred to as a group of organisms classified as a unit.

“Taxonomic hierarchy is the process of arranging various organisms into successive levels of the biological classification either in a decreasing or an increasing order from kingdom to species and vice versa.” Each of this level of the hierarchy is called the taxonomic category or rank.

In this system of classification, kingdom is always ranked the highest followed by division, class, order, family, genus, and species.2+1=3marks

23. Ans: Lichens are formed by the symbiotic association between algae or blue green algae and fungi which mutually benefits each other. The algal component is called phycobiont and the fungal component is called mycobiont. The phycobiont, being autotrophic, provides food to the mycobiont. The mycobiont absorbs minerals and water for its partner.

The association of fungi with the roots of higher plants is called mycorrhiza. In this association both fungi and plants are benefitted. The plants provide energy-yielding carbohydrates to the fungi and in turn the fungal filaments absorb essential mineral nutrients from the soil and provide it to the plant. Hence, the organism that provides mineral nutrients to their partner in both lichens and mycorrhizal association is fungi.2+1=3marks

24. Ans: The female cones are larger than the male cones and are positioned towards the top of the tree; the small, male cones are located in the lower region of the tree. Because the pollen is shed and blown by the wind, this arrangement makes it difficult for a gymnosperm to self-pollinate.3marks

25. Ans: Double fertilization is a complex process where out of two sperm cells, one fuses with the egg cell and the other fuses with two polar nuclei which result in a diploid (2n) zygote and a triploid (3n) primary endosperm nucleus (PEN) respectively. Therefore, the end products of double fertilization are the triploid endosperm nucleus and a diploid zygote. The triploid cell forms the endosperm and the diploid zygote develops into the embryo.2+1=3marks

26. Ans: a. Flame cells, ---Planaria --Excretion
b. Nephridia, ----Earthworm ---excretion
c. Cnidoblasts, ---Coelenterates – Stinging cells to paralyse prey
d. Malpighian tubules, ---Cockroach == Excretion
e. Trachea, ----Insects--- passage of air directly to organ system

f. Tube feet == Star fish - Locomotion, water vascular and respiration, food.....1/2x6=3marks

27. Ans: Aestivation: The term 'aestivation' refers to the mode in which sepals or petals are arranged in a floral bud with respect to other floral members. There are four types of aestivations in plants i.e., valvate, twisted, imbricate, and vexillary.3marks.

OR

Phyllotaxy refers to the pattern or arrangement of leaves on the stem or branch of a plant. It is of three types, alternate, opposite, and whorled phyllotaxy. In alternate phyllotaxy, a single leaf arises from the node of a branch. This type of phyllotaxy is observed in the sunflower, mustard, and peepal.3marks.

28. Ans: Secondary growth occurs due to the lateral meristems that divide similar to the apical meristems. The cells of the lateral meristems divide rapidly and grow outwards laterally rather than apically as in case of primary growth. The lateral meristems that cause secondary growth are known as cambium.3 marks

Section– D

29. Case based study :

(a) Define Taxonomy.

Ans: Taxonomy is the study of the classification, characterization, nomenclature, and identification of organisms and it is a branch of science. 1Mark

(b) Who is the father of Taxonomy?

Ans: Linnaeus. 1Mark

(c) What do you understand by the word Systematics? where is this word derived from?

Ans. The term Systematics is derived from the Latin word 'systema' which means the systematic arrangement of organisms. 2Mark

OR

Name the book published by Linnaeus. What is its content?

Ans: Systema Naturae is the book published by Linnaeus. It contains the classification of plants, animals based on taxonomy. 2Mark

30. The growth of roots and stems of plants in length accomplished by the apical meristems, is called primary growth. The dicotyledonous plants show secondary growth, i.e., an increase in the girth of stem and root with the help of lateral meristems, also called cambium. The intercalary meristem present in nodes will also increase the length of the stem.

(a) How does stem length increase?

Ans: by the apical meristems, 1Mark

(b) Name the meristem which increases girth of stem

Ans: lateral meristems 1Mark

(c) Name three meristematic tissues. In which plants is secondary growth observed.?

Ans: apical, lateral and intercalary meristem. In dicotyledonous plants secondary growth observed. 2Mark

OR

Differentiate between primary and secondary growth.

Ans: primary growth Growth due to meristematic tissue.

Secondary growth Growth due to cambium / lateral meristem tissue. 2Mark

Section—E

31. Ans : The classification of the fungi are based on the morphology of the mycelium, mode of spore formation and fruiting bodies. These form the basis for the division of the kingdom into various classes.

(I) Phycomycetes- This group of fungi includes members namely, Mucor, Rhizopus, etc.

A) Mode of nutrition- They are obligate parasites (cannot complete the life cycle without a host). They are generally found on plants as well as dead and decaying matter.

B) Mode of Reproduction- Asexual reproduction in members of this class of fungi occurs by the help of spores (zoospores) and aplanospores. These are produced in the sporangium. Oogamous, isogamous or anisogamous type of sexual reproduction is observed in few members of the class.

(II) Ascomycetes- This group of fungi includes members namely, Aspergillus, Yeast, etc.

A) Mode of nutrition- They can either be decomposers, coprophilous, or parasitic.

B) Mode of Reproduction- Sexual as well as asexual reproduction is observed in the members. Sexual reproduction occurs with the help of ascospores. While, asexual reproduction is assisted by the aid of asexual spores.

(III) Basidiomycetes- This group of fungi includes members namely, Puccinia, Agaricus, etc.

A) Mode of nutrition- They can be either decomposers or parasitic.

B) Mode of Reproduction- Fragmentation is a common way of asexual reproduction in this class. Sexual reproduction can take place by fusion of hyphae. This results in formation of basidiospores.

(IV) Deuteromycetes- This group of fungi includes members namely, Trichoderma, Fusarium, etc.

A) Mode of nutrition- They are majorly decomposers but parasitic way of nutrition is observed too.

B) Mode of Reproduction- This class of fungi do not show a sexual way of reproduction. Asexual reproduction takes place with the aid of asexual spores. reproduction occurs in fungi by means of spores, budding or fragmentation. While, sexual reproduction takes place by the aid of sexual structures and spores.

.....1+1+1+1+1=5 marks

OR

Chrysophytes, Euglenoids, Dinoflagellates and Slime moulds are unicellular, eukaryotic organisms. These organisms are with a well-defined nucleus and membrane-bound cell organelles. These are included in the kingdom Protista. Chrysophytes (golden algae and diatoms), Euglenoids, Dinoflagellates are autotrophic protists as they synthesise food by the process of photosynthesis. Slime moulds are heterotrophic in their mode of nutrition as they depend on other organisms for their nourishment. They are saprophytic as they draw nourishment from dead organisms. They resemble fungi in certain characters. Protozoa are microscopic unicellular eukaryotes that have a relatively complex internal structure and carry out complex metabolic activities.

.....1+1+1+1+1=5 marks

32. Ans: The unique features of the phylum Platyhelminthes are as follows: They have a dorsoventrally flattened body. They are acoelomate, triploblastic and bilaterally symmetrical. They have an incomplete digestive system, they have only one opening. They are found in soil, freshwater or as a parasite on plants, animals and even humans. Ascaris is found living as an endoparasite in the human intestine. The body is bilaterally symmetrical and triploblastic. The body is unsegmented, long, slender and tapers at the end

.....2 1/2 + 2 1/2 = 5 marks

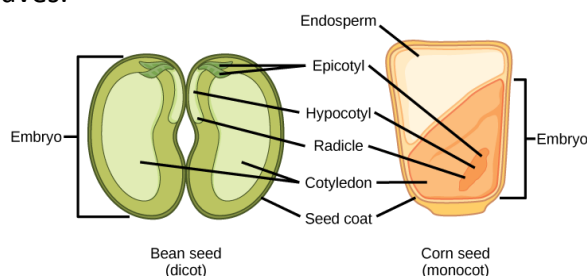
OR

Their forelimbs are modified into wings. They have well-developed flight muscles that help during the flight. Their hind limbs are adapted for walking, hopping, perching, grasping, wading and swimming. There are epidermal scales on their legs. Mammal class is defined by the presence of mammary glands and hair (or fur). Other traits of mammals include sweat glands in their skin, alveoli in their lungs, a four-chambered heart, and a brain .

.....2 1/2 + 2 1/2 = 5 marks

33. Ans: The Dicot seeds are bulky, oval and slightly indented on one side. On this side there is a short longitudinal, whitish ridge called the raphe. At one end of raphe there is a minute opening known as Germ pore or micropyle. The embryo is enclosed by the seed coat. It consists of cotyledons attached to primary axis. It has rudimentary root portion called the radicle and a rudimentary stem portion called plumule. The tip of the radicle projects outside and is nearer to the micropyle. The plumule is placed between two cotyledons. It consists of a shoot axis and a small bud with tiny little folded leaves.

...1+4=5 marks



The monocot seeds are mostly endospermic. The seed coat is thin and fuses with pericarp. Seed contains one cotyledon called scutellum and shoot axis. The lower part of the axis is the radicle, covered by a sheath called coleorhiza. The upper part of an axis is called plumule, covered by a sheath called coleoptile. Aleurone layer is a proteinaceous layer that separates endosperm from the outer covering.

.....1+4=5 marks

OR

Stems of various plants have undergone modifications to perform different functions.

1. Underground stems or storage stems: Examples: Rhizomes, Corms, tubers

In ginger the underground stem is called as a rhizome. The underground stem in Colocasia (arvi) is known as corm. Both are modified for the storage of food. Also, these stems help in vegetative reproduction of these plants. The tips of the underground stem in potato plants become swollen due to the accumulation of food. The potato is a tuber that helps in the storage of food and bears eyes on it. Subtended by a leaf scar, these eyes bear buds that give rise to new plants.

2. Supportive stems: Example: tendrils. The stem in some weak plants bears thin, slender, and spirally-coiled structures called as tendrils that help the plant get attached to nearby structures for support. Tendrils are found in cucumbers, melons and other members of the family Cucurbitaceae.

3. Protective stems: Example: Thorns. The stem in Bougainvillea and citrus plants (like lemon and orange) bear sharp, pointed structures called as thorns, which provide protection to the plant from herbivores.

4. Photosynthetic stems : Example: Opuntia. The stem in the Opuntia is green. It carries out the process of photosynthesis in the absence of leaves.

5. Others stem modifications: In some plants, underground stems such as grasses spread in the soil and help in perennation. These stems are called as runners.

The short lateral stem called as the offset in some aquatic plants (such as Eichhornia) bears leaves and tufts of roots at the node and gives rise to new plants.

.....1+4=5 marks

-----: **BEST OF LUCK** :-----