



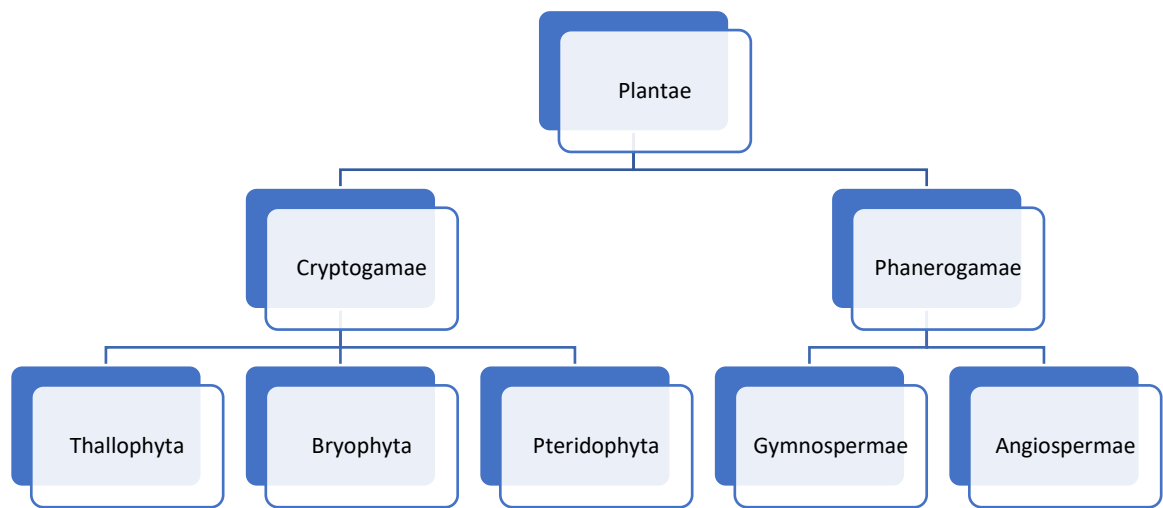
DEPARTMENT OF SCIENCE 2022-23

BIOLOGY QUESTION BANK - 2

CLASS: XI

Chapter 3: Plant Kingdom

I	<u>SHORT ANSWER TYPE QUESTIONS FOR 2 MARKS:</u>						
1.	<p>Differentiate between cryptogams and phanerogams.</p> <p>Ans:</p> <table border="1" data-bbox="305 751 1458 1083"> <thead> <tr> <th data-bbox="305 751 881 804">Cryptogams</th> <th data-bbox="889 751 1466 804">Phanerogams</th> </tr> </thead> <tbody> <tr> <td data-bbox="305 814 881 972">i)Cryptogams are plants having underdeveloped and hidden reproductive organs.</td> <td data-bbox="889 814 1466 972">Phanerogams are plants having well differentiated reproductive tissue.</td> </tr> <tr> <td data-bbox="305 982 881 1083">ii)For reproduction, cryptogams produce spores.</td> <td data-bbox="889 982 1466 1083">For reproduction, phanerogams produce seeds.</td> </tr> </tbody> </table>	Cryptogams	Phanerogams	i)Cryptogams are plants having underdeveloped and hidden reproductive organs.	Phanerogams are plants having well differentiated reproductive tissue.	ii)For reproduction, cryptogams produce spores.	For reproduction, phanerogams produce seeds.
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i)Cryptogams are plants having underdeveloped and hidden reproductive organs.	Phanerogams are plants having well differentiated reproductive tissue.						
ii)For reproduction, cryptogams produce spores.	For reproduction, phanerogams produce seeds.						
2.	<p>Which are the divisions that are included in cryptogams and in phanerogams?</p> <p>Ans: Thallophyta, Bryophyta and Pteridophyta are included under cryptogams. Gymnosperms and Angiosperms come under phanerogams.</p>						
3.	<p>Name the division called 'Amphibians of kingdom Plantae and why?</p> <p>Ans: Bryophyta is called 'Amphibian of kingdom Plantae'. Bryophytes are terrestrial plants found growing in moist places ;but for reproduction they depend on water ,so they are called 'Amphibians'.</p>						
4.	<p>Why are pteridophytes called 'first vascular cryptogams'?</p> <p>Ans: Pteridophytes includes plants in which reproductive tissue is underdeveloped and they reproduce through spores. So they are included under cryptogams. Among cryptogams, they are the first group of plants that have vascular tissue in them. Hence, they are called 'First vascular cryptogams'.</p>						
5.	<p>With the help of a flow chart, depict the classification of Plantae into divisions.</p> <p>Ans:</p>						



6. State the salient features of thallophyta.

Ans: The salient features of thallophyta are:

- i) They are aquatic, autotrophic plants.
- ii) The plant body is an undifferentiated mass called thallus.
- iii) Vascular tissue is absent in these plants.
- iv) They have under developed hidden reproductive tissue.

7. Name the groups of algae and list the chief photosynthetic pigments in each group.

Ans: The groups of algae and their photosynthetic pigments are:

Green algae	Brown algae	Red algae
Chlorophyll a + b	Chlorophyll a + c	Chlorophyll a + d

8. Suggest any two aquatic adaptations for algae.

Ans: i) Algae do not have vascular tissue as they are surrounded by water, from which nutrients enter directly into the cells.

ii) Algae do not have rigid plant parts and so the flexibility of the thallus the tides or water currents do not injure the plant body. Water keeps the body buoyant and so they do not need mechanical tissue to keep them erect.

9. What are the advantages of vascular plants over the non vascular plants?

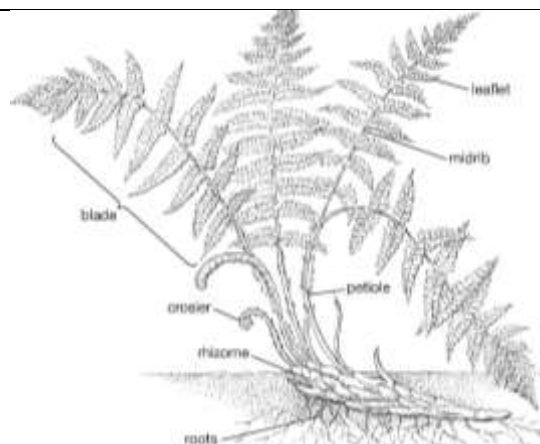
	<p>Ans:Vascular plants have the following advantages:</p> <p>i)Presence of vascular tissue to ensure proper growth and development of the plant.</p> <p>ii)Well developed root system and mechanical tissue .</p>						
10.	<p>Identify the following:</p> <p>a) Amphibians of Plantae</p> <p>b) First vascular plants</p> <p>c) Naked seeded plants</p> <p>d) Flowering plants</p> <p>Ans: a) Bryophytes b)Pteridophytes c)Gymnosperms d)Angiosperms</p>						
11.	<p>Why are gymnosperms and angiosperms classified separately, eventhough both are phanerogams?</p> <p>Ans: Gymnosperms and Angiosperms are both seed bearing plants but classified separately due to the following reasons:</p> <p>i) In gymnosperms ,seeds are not enclosed in fruits and so called naked seeded.In angiosperms,seeds are enclosed within fruits.</p> <p>ii) In gymnosperms,the endosperm is haploid whereas in angiosperms is triploid.</p>						
12.	<p>What are antheridia and archeonia?</p> <p>Ans: Antheridia are the male sex organs in bryophytes and pteridophytes that produce motile antherozoids. Archeonia are the female sex organs that produces the non motile egg.</p>						
13.	<p>Differentiate between bryophytes and pteridophytes.</p> <p>Ans:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Bryophyta</th> <th style="text-align: center;">Pteridophyta</th> </tr> </thead> <tbody> <tr> <td>The plant body is differentiated into leave like,root like structures.No true plant body.</td> <td>Pteridophytes have a true well developed plant body with roots,stem and leaves.</td> </tr> <tr> <td>Vascular tissue is absent</td> <td>Vascular tissue is present.</td> </tr> </tbody> </table>	Bryophyta	Pteridophyta	The plant body is differentiated into leave like,root like structures.No true plant body.	Pteridophytes have a true well developed plant body with roots,stem and leaves.	Vascular tissue is absent	Vascular tissue is present.
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14.	<p>What is protonema and prothallus?</p> <p>Ans: Protonema is the first gametophytic stage in mosses that is formed directly from the germination of the spores and later form a leafy stage that produces the gametes.</p>						

	Prothallus is the independent gametophytic structure in pteridophytes that directly produces sex cells.
15.	<p>Briefly explain the prothallus in pteridophytes.</p> <p>Ans: Prothallus is the independent haploid gametophytic structure in pteridophytes formed by the germination of spores. On their under surface ,the male sex organs- antheridia and female sex organs -archegonia develop.</p>
16.	<p>How does fertilisation occur in bryophytes?</p> <p>Ans: In bryophytes the general plant body is a haploid gametophyte that produces antherozoids, the male sex cells and egg. The antherozoids are released into water and so swim towards the nonmotile egg to form the zygote, which is diploid.</p>
17.	<p>What are the features of pteridophytes?</p> <p>Ans: The features of pteridophytes are:</p> <ul style="list-style-type: none"> i)The plants in this division have a developed plant body with proper leaves, stem and roots. ii)The pteridophytes have vascular tissue. iii)The reproductive tissue is under developed and hidden. iv) Reproduction occurs through spores
18.	<p>Identify the division to which the below shown plant belongs to with any two reasons.</p> <div style="text-align: center;"> <p>The diagram illustrates the life cycle of a moss. It shows a vertical stalk labeled 'seta' that supports a 'sporogonium' at the top. This upper part is bracketed as the 'sporophytic generation'. The lower part of the plant is a leafy stem with two branches labeled 'female branch' and 'male branch'. This lower part is bracketed as the 'gametophytic generation'.</p> </div> <p>Ans: The plant shown is Funaria and it belongs to division Bryophyta.</p> <ul style="list-style-type: none"> i)The plant body is a gametophyte and the sporophyte is found attached to it. ii)The reproductive system is hidden and no vascular tissue.

19.	<p>What is algin? Give its economic importance.</p> <p>Ans: The vegetative cells of brown algae have a cellulosic wall usually covered on the outside by a gelatinous coating of algin. It is used in making of ice creams, candy, cosmetics etc.</p>						
20.	<p>Give the economic significance of carrageen.</p> <p>Ans: Carrageen is a water holding complex polysaccharide obtained from red algae. It is used in textiles, food and pharmaceutical industry.</p>						
III	THREE MARK QUESTIONS :						
21.	<p>Explain the life cycle of pteridophytes briefly.</p> <p>Ans: In pteridophytes, the main plant body is a sporophyte which is differentiated into true root, stem and leaves. The sporophytes bear sporangia, which produce spores by meiosis in spore mother cells. The spores germinate to give rise to multicellular, free-living, mostly photosynthetic thalloid gametophytes called prothallus.</p> <p>The gametophytes bear male and female sex organs called antheridia and archegonia, respectively. Water is required for transfer of antherozoids – the male gametes released from the antheridia, to the mouth of archegonium. Fusion of male gamete with the egg present in the archegonium result in the formation of zygote. Zygote thereafter produces a multicellular well-differentiated sporophyte which is the dominant phase of the pteridophytes.</p>						
22.	<p>Give an account of use of algae in medicine.</p> <p>Ans: i) Chlorellin is an antibiotic obtained from chlorella. ii) Carrageen is used as a blood coagulant. iii) Agar agar is jelly like substance obtained from algae used in preparing culture media for various lab experiments.</p>						
23.	<p>Differentiate between sporophyte and gametophyte.</p> <p>Ans:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">sporophyte</th> <th style="width: 50%; text-align: center;">Gametophyte</th> </tr> </thead> <tbody> <tr> <td>i) Multicellular diploid structure in the life cycle of plants</td> <td>i) Multicellular haploid structure in the life cycle of plants</td> </tr> <tr> <td>ii) Formed from zygote</td> <td>iii) Formed by germination of spores.</td> </tr> </tbody> </table>	sporophyte	Gametophyte	i) Multicellular diploid structure in the life cycle of plants	i) Multicellular haploid structure in the life cycle of plants	ii) Formed from zygote	iii) Formed by germination of spores.
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	iii)Takes part in asexual reproduction by producing spores meiotically.	iii)Takes part in sexual reproduction by producing gametes without meiosis.
24.	Compare the groups of algae on the basis of chlorophyll and stored food. Ans:	
	Group of algae	Chlorophyll
	a) Green Algae	a + b
	b) Brown algae	a + c
	c) Red algae	a + d
25.	State any three differences between thallophyte and bryophyta. Ans:	
	Thallophyta	Bryophyta
	i)Plant body is an undifferentiated one called thallus.	i)Plant body having proper tissue differentiation.
	ii)Sex organs are unicellular or multicellular	ii)Sex organs are multicellular
	iii)Gametophytic and sporophytic stages are independent.	iii)Gametophytic and sporophytic stages are dependent.
26.	Explain the significance of reduction division in the life cycle of a moss and a fern. Ans: In mosses, reduction division occurs in the spore mother cells present in the capsule of the sporophyte. The spore later gives rise to the gametophyte, which is the prominent phase in mosses. In ferns, the reduction division takes place in the spore mother cells of sporangia present on the under surface of leaves. These spores give rise to the prothallus, the gametophytic phase in ferns which give rise to sex cells that fuse to form zygote which develops into the sporophyte, the dominant phase in ferns.	
27.	Describe the main features of pteridophytes. Ans: The main features of pteridophytes are: i)The general plant body of the pteridophyte has well developed roots,stem and leaves.	

	<p>ii)Spores are formed on the leaves through reduction division. Spores grow and develop into a gametophytic structure called prothallus.</p> <p>iii)the gametes fuse to form zygote that later grows and develops into the plant body. Vascular tissue differentiation is found in these plants.</p>
28.	<p>Where are antheridia and archegonia located in ferns? State their importance.</p> <p>Ans: Antheridia and archegonia are located on the lower surface of the prothallus, the gametophytic stage in ferns.</p> <p>Antheridia produce the male sex cells called antherozoids and archegonia produce female sex cell, the egg. These sex cells fuse to form zygote which grows and develops into the sporophyte, the prominent plant body.</p>
29.	<p>What are the major differences between the plant body of a moss and a fern?</p> <p>Ans: i) The plant body in mosses consists of leaf like, root like structures whereas in ferns - the plant body consists of proper roots, stem and leaves.</p> <p>ii) Vascular tissue is absent in mosses whereas in ferns, vascular tissue is present.</p> <p>iii)The general plant body in mosses is a haploid gametophyte whereas in pteridophytes, it is a diploid sporophyte.</p>
30.	<p>Give a brief account of the economic importance of algae.</p> <p>Ans: i) Algae help in carbon dioxide fixation on earth through photosynthesis. Being photosynthetic they increase the level of dissolved oxygen in their immediate environment. They are of paramount importance as primary producers of energy-rich compounds which form the basis of the food cycles of all aquatic animals.</p> <p>ii) Chlorella a unicellular algae rich in proteins is used as food supplement by space travellers. Many species of Porphyra, Laminaria and Sargassum are among the 70 species of marine algae used as food.</p> <p>iii) Certain substances obtained from algae like algin, carrageen, agar agar etc are used commercially in cosmetics, ice creams, culture media preparations etc.</p>
III	<u>LONG ANSWER TYPE QUESTIONS FOR 5 MARKS</u>
31.	<p>i) Observe the diagram given below and identify the division to which the plant belongs.</p>



ii) State the significance of leaflets in reproduction and life cycle of these plants.

Ans: i) The plant is fern belonging to division the Pteridophyta. Well defined plant body having vascular tissue and under developed reproductive tissue.

ii) Leaflets in ferns are photosynthetic and also bear sporangia on their lower side which give rise to spores meiotically. These spores will germinate into the prothallus, the gametophyte which have the sex organs on their ventral side. These sex organs will produce sex cells which in turn help in sexual reproduction. The sex cells fuse to form the zygote. The zygote will grow into the diploid plant body, the sporophyte. Thus the leaflets play a significant role in the life cycle of ferns.

32. Briefly explain the characteristics of the various groups of algae.

Ans: The various groups of algae are: Green algae, Brown algae and Red algae

Characteristics	Green algae	Brown algae	Red algae
Cell wall	Cellulose only	Cellulose and algin	Cellulose, pectin and esters
Chlorophyll	Chlorophyll a and b	Chlorophyll a and c	Chlorophyll a and d
Stored food	starch	lipids	Floridean starch

33. Briefly explain the life cycle of funaria.

Ans: The predominant stage of the life cycle of a moss is the gametophyte which consists of two stages.

i)The first stage is the protonema stage, which develops directly from a spore. It is a creeping, green, branched and frequently filamentous stage.

	<p>ii)The second stage is the leafy stage, which develops from the secondary protonema as a lateral bud. They consist of upright, slender axes bearing spirally arranged leaves. They are attached to the soil through multicellular and branched rhizoids. This is the predominant plant body.</p> <p>iii) The gametophytic plant body bears the sex organs. Vegetative reproduction in mosses is by fragmentation and budding in the secondary protonema.</p> <p>iv)In sexual reproduction, the male sex organs- antheridia and female sex organs- archegonia are produced at the apex of the leafy gametophyte.</p> <p>v)After fertilisation, the zygote develops into a sporophyte, consisting of a foot, seta and capsule.The capsule contains spores. Spores are formed after meiosis.</p>				
34.	<p>Explain the various divisions of kingdom Plantae with one salient feature of each.</p> <p>Ans: Kingdom Plantae consists of five divisions- Thallophyta, Bryophyta, Pteridophyta, Gymnospermae and Angiospermae.</p> <p>Division Thallophyta – This division includes aquatic, autotrophic plants with a undifferentiated plant body called thallus having hidden reproductive tissue.</p> <p>Division Bryophyta – This includes plants with leaf like,root like structures in their body with underdeveloped reproductive tissue .These plants are terrestrial but depend on water for reproduction.</p> <p>Division Pteridophyta – This division includes the first vascular plants with a proper plant body but having underdeveloped reproductive tissue.</p> <p>Division Gymnosperms – This division includes evergreen woody trees with exposed seeds and they do not bear fruits.</p> <p>Division Angiosperms- This division includes the highly evolved flowering plants.</p>				
35.	<p>Compare the three divisions of cryptogamae.</p> <p>Ans: Cryptogamae includes plants with underdeveloped and hidden reproductive tissue. The divisions that are included under cryptogamae are: Thallophyta, Bryophyta and Pteridophyta.</p> <table border="1" data-bbox="300 1732 1453 1785"> <tr> <td data-bbox="300 1732 592 1785">Characteristics</td> <td data-bbox="592 1732 885 1785">Thallophyta</td> <td data-bbox="885 1732 1161 1785">Bryophyta</td> <td data-bbox="1161 1732 1453 1785">Pteridophyta</td> </tr> </table>	Characteristics	Thallophyta	Bryophyta	Pteridophyta
Characteristics	Thallophyta	Bryophyta	Pteridophyta		

	Plant body	Thallus	Plant body consists of leaflike and rootlike structures	Plant body is well developed with roots, stem and leaves
	Vascular tissue	Absent	Absent	Starts to develop
	Reproductive tissue	Hidden	Hidden	Hidden
x.....x				