Chhatrapati Shahu Ji Maharaj University, Kanpur

Answer Script Details
Barcode 6434667

Roll No. 24062000472
Total Mark 50/75.00

Exam MASTER OF SCIENCE _ODD EXAM-DEC-24
Subject B040703T - DIVERSITY OF PTERIDOPHYTES AND GY

Question wise Mark Summary

Q.No	Mark	Q.No	Mark	Q.No	Mark	Q.No	Mark
1A	3/5	8	11/15				
1B	2.5/5	9A	0/5				
1C	3/5	9B	0/5				
1D	3.5/5	9C	0/5				
1E	3.5/5	9D	0/5				
1F	3.5/5						
1G	3/5						
1H	3/5						
1I	2/5						
2	12/15						
3	0/15						
4	0/15						
5A	0/7						
5B	0/7						
5C	0/7						
6	0/15						
7	0/15						

Chhatrapati Shahu Ji Maharaj University
Kanpur, Uttar Pradesh

PART-II

MARKS OBTAINED										
Q.	1	2	3	4	5	6	7	8	9	10
(a)										
(b)										
(c)										
(d)										
(e)										
(f)										
(g)										
(h)										
(i)										
(j)										
Total										
Total Marks in Figures										Max. Marks
Total Marks in Words										

Date of Exam: 24/01/25 Shift: I Room No.: 24

Paper Code: B04070 3T Subject: Hydrology & Water Resources Engg. I

Name of Candidate: NANCY RANI

Roll No.: 2 4 0 6 2 0 0 0 4 7 2

Signature of Candidate

Signature of Invigilator

COE Facsimile

B 0 4 0 7 0 3 T
Paper Code

Signature of Evaluator

Course: Master of Science (BOTANY)

Session: 2024-25 Year/Semester: I

Subject Name: University of Kurukshetra Hydrology

Medium: English ● Hindi ○

Paper Code: B 0 4 0 7 0 3 T

Exam Date: 2 4 0 1 2 0 2 5

Name of Candidate: N A N C Y R A N I

Father's Name: R A M P R A S A D R A N I

College Code: K N O 4

Exam Centre Code: K N O 4

Type of Exam: Regular ● Ex-Student ○ Private ○ Back Paper Exam ○

ANSWER BOOKLET NO.: 6434667

B O 4 0 7 0 3 T
Paper Code

Enrollment Number: C S J M A 2 4 0 0 0 1 3 1 6 5 8

Candidate's Roll Number: 2 4 0 6 2 0 0 0 4 7 2

Paper Code: B 0 4 0 7 0 3 T

Signature of Candidate

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नोट - 1. परीक्षार्थी को निर्देशित किया जाता है कि आवरण पत्रके पृष्ठ भाग पर अंकित सभी निर्देशों को सावधानी पूर्वक पढ़ें।
2. ओएमआर में भरी जाने वाली प्रविष्टियाँ काली स्याही से शुरू की जायें। 3. गोलों को काले या नीले बॉलपेन से भरा जायें।

INSTRUCTION TO THE CANDIDATE FOR FILLING PART-I

1. Read the instructions carefully given on the answer script and admit card.
2. Write Date of Exam, Shift, Paper Code & Name of Subject Correctly.
3. Write Name & Roll No. Correctly.
4. Write Semester & Branch Correctly.

INSTRUCTION TO THE CANDIDATE FOR FILLING PART-III

1. Use blue or black ball point pen for writing alphabets & numerals in ☐ boxes.
2. Carefully study the example before you start marking.
3. As shown in the example below, blacken thecircles completely.

4. Make no Stray marks o n this sheet.
5. **DO NOT WRITE OR MARK ON THE BAR CODE.**

IN ORDER TO AVOD UFM (UNFAIR MEANS) :

1. The Roll No. and Answer Book no. found elsewhere or any other symbol found in the answer book will be treated as unfair means.
2. Any tempering of Bar Code and Booklet no shall be treated as Unfair Means.
3. Do Not bring the materials like slip of paper/mobile/digital diaries/ study material/ revision notes in examination hall. Possession of the mobiles/ digital diaries/electronic/digital/ watch and any other electronic gadget except memory less scientific calculator shall be considered as UFM case.
4. Do not keep or paste currency note in answer script it shall be consider as UFM.

अनुचित साधन से बचने हेतु :

1. उत्तर पुस्तिका के निर्देशित स्थान को छोड़कर अनुक्रमांक एवं उत्तरपुस्तिका का क्रमांक कहीं और न लिखें तथा कोई भी चिन्ह न बनायें क्योंकि यह अनुचित साधन प्रयोग की परिधि में आता है।
2. उत्तर पुस्तिका के बारकोड अथवा उत्तर पुस्तिका संख्या पर छेड़ छाड़ करने पर अनुचित साधन प्रयोग माना जायेगा।
3. परीक्षा कक्ष में निम्न वस्तुएं साथ न लायें, जैसे लिखे हुए कागज के टुकड़े, मोबाईल, डिजिटल डायरी, डिजिटल वॉच, कॉपी, पुस्तक यह सभी वस्तुएं जो अनुचित साधन के अन्तर्गत आती है। केवल संबंधित प्रश्नपत्र में ही मेमोरी लेस साइंटिफिक कैलकुलेटर ले जाने की अनुमन्यता होगी।
4. उत्तर पुस्तिकाओं में रबड़ें न रखें न ही उत्तर पुस्तिका में चिपकायें। ऐसा करना अनुचित साधन प्रयोग की परिधि में आता है।

परीक्षार्थियों के लिए निर्देश

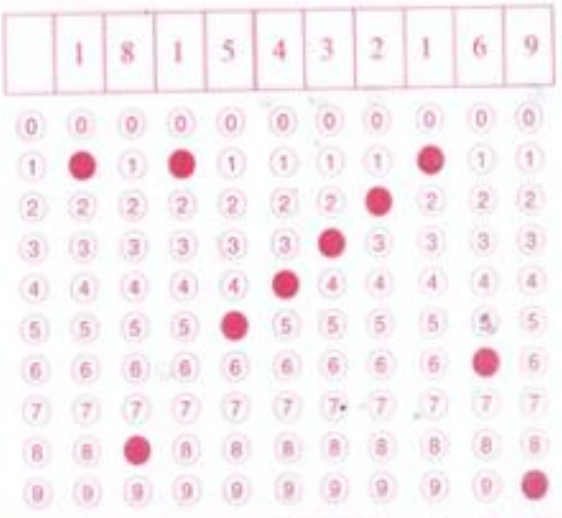
1. प्रवेश पत्र एवं उत्तर पुस्तिका पर दिये गये निर्देशों को ध्यान से पढ़ें।
2. उत्तर पृष्ठ के दूसरी तरफ कुछ न लिखें।
3. उत्तर पुस्तिका के पृष्ठों पर दोनों तरफ लिखें।
4. प्रश्न पत्र पर अपने अनुक्रमांक के अतिरिक्त कुछ न लिखें।
5. प्रश्न पत्र कोड एवं प्रश्न पत्र ID सावधानी पूर्वक लिखें।
6. अपनी स्थिति स्पष्ट लिखें।
7. उत्तर पुस्तिका के पृष्ठों की संख्या देखें। अगर उत्तर पुस्तिका में पृष्ठ (1-24) से कम है या फटे हुए है, तो परी शुरू होने के पूर्व दूसरी उत्तर पुस्तिका ले लें।
8. प्रश्नपत्र को देख, यदि प्रश्नपत्र के विषय कोड, विषय का नाम तथा प्रश्न में कोई त्रुटि है तो उसके परीक्षा होने के 30 मिनट के अन्दर कक्ष निरीक्षक को तत्काल सूचित करें, उसके बाद विश्वविद्यालय द्वारा कोई क नहीं की जायेगी।
9. प्रश्नों के उत्तर लिखने के लिये पेंसिल का प्रयोग न करें।
10. दो कॉपी या अतिरिक्त ग्राफ नहीं दिया जायेगा।

INSTRUCTION TO THE CANDIDATE

1. Read the instructions carefully given on the Question Paper, Admit Card & Answer Script.
2. Do not write anything on back side of the cover page.
3. Write on both sides of pages of answer book.
4. Do not write anything on question paper except Roll Number.
5. Write Paper Code & Question Paper Id carefully.
6. CHECK the number of pages (1-24) or any other kind of damage in your answer script, if found than change the answer script immediately before the commencement of examination.
7. CHECK the Question Paper for any kind of discrepancy e.g. Subject Code, Su Name, and Question of the Question Paper during first THIRTY MINUTES of t commencement of the exam, so that it can be corrected in TIME. After that no corrections shall be entertained by the university.
8. Do not use pencil for answering the question.
9. Write status correctly e.g. those appearing in carry over papers should fill in stat as Carry Over. Those appearing as Ex- Students should fill in status as ex.
10. No supplementary answer book & graph paper will be provided.

INSTRUCTION TO THE CANDIDATE FOR FILLING PART-IV

1. Use blue or black ball point pen for writing alphabets & numerals in ☐ Boxes.
2. Use blue or black ball point pen for filling the circles.



Note- If your Roll No. is of 10 digits. Please leave first three columns .

Paper Code
B 0 4 0 7 0 3 T

1

Section → C

Ans → B

Economic importance of Gymnosperms

Gymnosperms have variety of uses. Gymnosperms are naked seed plants. they are the first plants to have seeds. Gymnosperms are very benificial Economically so. so here I am going to describe some economic importance of Gymnosperms:-

1. As woods
2. Resins
3. Paper industry
4. Essential oils
5. Medicine / dru
6. Food
7. Tanning

Paper Code

1. Gymnosperms used as woods

a) Abies alba

The wood of this Gymnosperms is very benificial it is used in the making Musical instruments.

b.) Cedrus deodara

Cedrus deodara are very famous in North India for their wood. Its wood is Resistant towards water & insects therefore it is used in making furniture.

c) Agathis australis

These are Gymnosperms so famous world wide. They are found in New zealand. It is used to make expensive furniture.

d.) Sequia sempervirens
(Red wood)

Red wood of sequia is so resistant towards so many things. It is used to make train seats, poles etc.

(2) Resin

Resins are produced by certain gymnosperms (specially Coniferales) ~~and~~ Expensive resins are used in making Cosmetics, Medicines etc.
cheap resin is used in the manufacture of Paints, Varnishes, Laudary & Soap etc.

a.) Rosin

↳ This Resin is secreted by lines. It has (Resin + essential oil). which prevents the degradation of substances. It is used in the spearly Mummies. It is found mostly in U.S.

b.) Copal

(Kauri Copal) Agathis australis produces Copal. Copal is the hard Resin. It is used in making of paints and varnishes.

(Fresh Resin from Dacrycarpus amiana is used for healing wound)

c) Canadian Balsam

Candian Balsam is the resin

which is prouce by ~~Zanda~~ Abies balsamia

Canadian balsam has very high refractive index therefore it used in mounting of the microscopic ~~substances~~ substances.

4.) Amber

Amber is the resin produced by the fossil lines, so Amber is the resin of fossil plant.
Amber is found in Myanmar ~~casa~~ Malty.
Amber is used for Xray processes.
Amber is anticoagulant.

(3.) Paper industry

Gymnosperms are widely responsible for producing ~~bat~~.
Picea, Taxus produces paper.

Picea produces very high ~~ipa~~ and best quality of paper.

(4.) Tanning

~~gymnosperms~~ Certain gymnosperms are used in the production of tannins which is used in leather polishing and many other things.

Paper Code

5

(5) Essential oils

- certain gymnosperms are used in the production of essential oils, perfumes, soaps with good fragrance as certain gymnosperms have naturally good smell.

Cedrus deodara is used to make cedrus soaps in India.

(6) Medicine / drugs

Taxus is the gymnosperm which is anti cancer. it helps in treatment of cancer.

(7) Food

Certain gymnosperms are used in the form of food. Sago comes from Cycas circinalis, Cycas rumphii, Cycas revoluta

Kaffir bread is made from gymnosperms.

In Japan Ginkgo seeds are roasted and eaten.

Chikoza pine is also eaten.

Paper Code

Section → B

Ans → 2

Heterospory is the feature shown in some species of ~~gymnosperms~~ Pteridophytes. Normally there are two types of spores in ~~gymnosperms~~ Pteridophytes

Homospores	Heterospores
Both the spores are similiar there is no differentiation.	Both spores are different & are called heterospores.

Heterospory is the phenomenon in which both the spores are different.
Normally there are two types of spores (Heterospores)

- Microspores
- Megaspores

2 spores

Microspores → present in a microsporophyll → produce male gametophyte

Megaspores → present in megasporophyll → produce female gametophyte

Microspores are normally produced in large numbers they are small in size.

Megaspores are produced less in number they are large in size.

~~Heterospory is induced by :-~~

Origin of heterospory

- Microspore: when due nutrition is less and spores are more so in order to give a nutrition to every spore there is ~~less~~ and
- Megaspore: when certain spores degenerate and

Microspores are large in number ✓ nutrition gets only to the limited number bcoz megaspores mcq are present so o megaspore increases in size.

therefore; we see that Microspores are small and more in number and Megaspores are large and less in Number.

Selegenella rupsteris is the pteridophyte in which Heterospory like gymnosperm is seen.

In Isoetes also heterospory is seen

Megaspore →

In Isoetes

- Microspore ✓
  - 1,00000 - 1,50000 Microspore (functional) are there
- Megaspore
  - Only, 50-60 functional Megaspores

Selaginella

Microspores → many

Megaspores → 4 functional megaspore

Evolution and origin of seed habit

~~Megaspore → ovule → pre-ovule → ovule →~~

4 functional
Megaspore → pre-ovule → ovule → Naked → Covered
(Selaginella) seed · Gymnosperm seed Angiosperms
Salvinia

There are following steps of seed habit evolution and formation of integument

(1) Presence of the heterospory in certain species of Pteridophytes

As I explained earlier that there is heterospory present in certain certain species of Pteridophytes i.e., Selaginella etc.

(2) Reduction in the number of megaspores.

Due to lack of nutrition only few megaspores are present and rest are degenerated. and that 1 megaspore increases in size.

(3) In mostly pteridophytes we see that only soon after fertilization the zygote moves out.
But in Selaginella we see embryo remains in the archegonia which is the characteristic feature towards seed formation.

(4) Protective layers present

Normally in Pteridophytes → No protective layers of are protective layer in present in Megasporelike Angiosperm.
But in Selaginella → ?ptum is present →

Origin of integument

- Synangial theory
  - Synangia forms integument
- Telome theory
  - Telome forms the integument
    - there are two types of telom → fertile telome & sterile telome.

Paper Code

11

formation of ~~telome~~ integument according to the telome theory.

- **Breonule**

the structure present before ovule formation (the structure in which integument is Not fully present)

↓

It is called Bre ovule

↓

It is precursor to the ovule formation

In fossil *Archespora arnoldii*

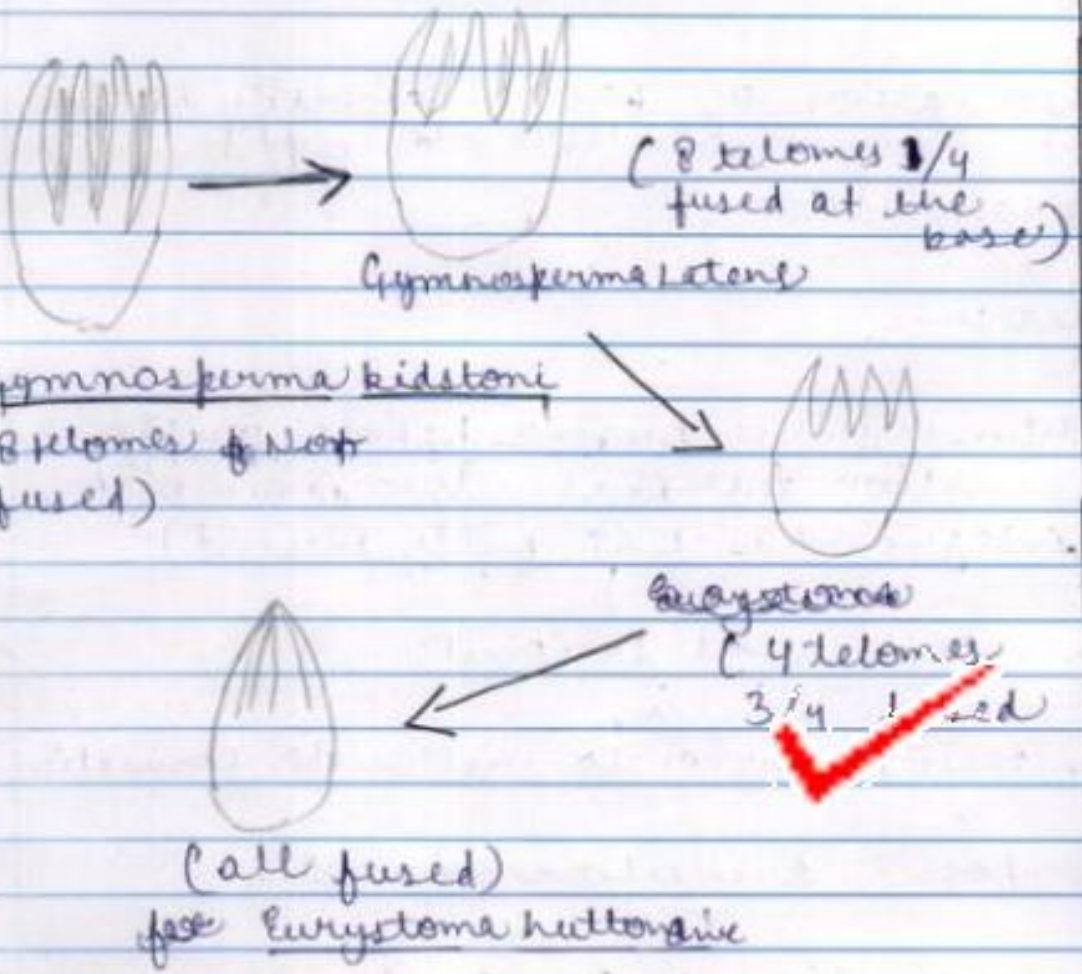
↓

formation of bre ovule is seen and micropylar end is also formed.

Paper Code

~~In fossil in the Scotland plants the~~ .

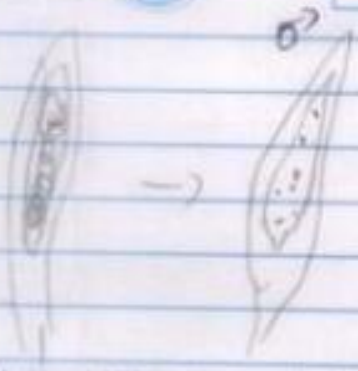
The fossils found in Scotland the process of Integument formations was seen clearly.



- therefore;
from this we can understand that how process is completed.

Paper Code

13



degeneration of Megspore

only one Meg.

Homospore Heterospore

formation of integument

So By this it is clear the Heterospory might be the reason for the seed formation of the integument (as because of this there is degeneration of megaspores)

P.T.O

Paper Code

Section → A

(a.)

Ans:
unitegmic as integument is present.
Orthotropus ovule is present.

(b.)

Psilotum is the as present in the a Pteridophyte.
Psilotum is the the member of the group Psilotales.
Photosynthetic
Leafs are absent in the Psilotum

Photosynthesis is performed by the help of stem in Psilotum as there

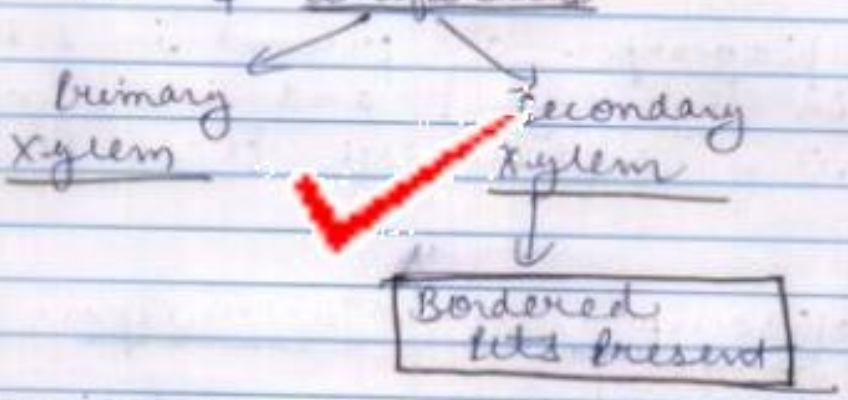
is chlorophyllous stem in Psilotum and Psilotum are Ancient Pteridophytes. Spore are present in sporangium in Psilotum.

Spores are homosporous in Psilotum that is only one type of spore are present in Psilotum. Spores take part in reproduction in Psilotum and form Gametophyte after germination.

(c)

Bordered pits are the characteristic feature of the coniferales. coniferales are present in Gymnosperms. ~~there are is binary Xylem present.~~ So are

↳ there in ⊕ Coniferales



~~there~~ in coniferales there is are primary xylem and secondary xylem and in secondary xylem their is the presence of Bordered pits.

Various types of Bordered pits are.

present in the coniferales :—

Reticulate Bordered lit
Scalay form Bordered lit

d.)

Lepidocarpon

Lepidocarpon is the member of Pteridophytes.

~~Lepidocarpon are kept in the Ligulate Pteridophytes.~~

Lepidocarpon are present in ~~b~~ it in Lycophyta and in ~~w~~phyta it is kept in the class Ligulopida

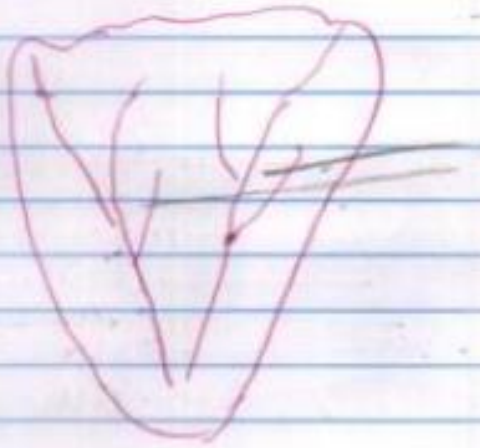
Lepidocarpon show Heterospory.

fossils of Lepidocarpon were found which show heterospory.
Heterospory → in which two types of spores are present.
It is evolutionary phenomenon which is helpful in the evolution of seed.

Paper Code

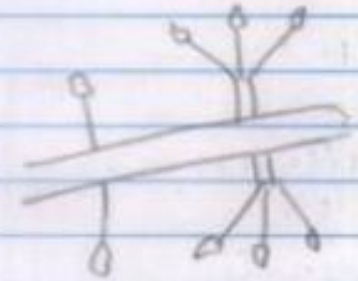
17

e)



2 vascular streams are present in

Leaf of Ginkgo biloba



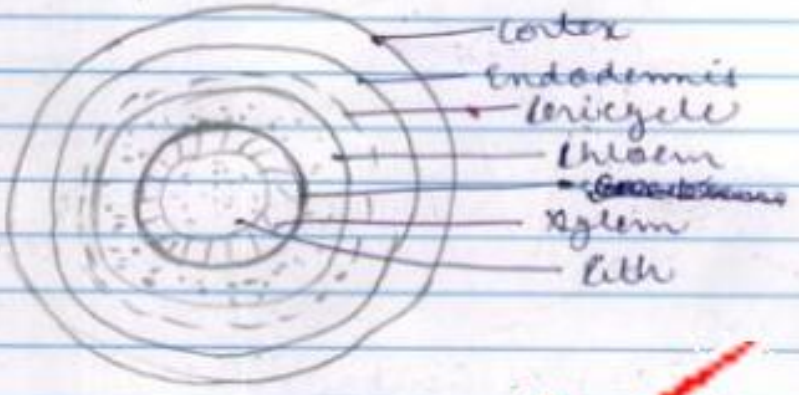
Ext. structure of Ginkgo biloba

two vascular streams are present in Ginkgo ~~biloba~~ biloba. ~~two~~ ~~does~~ on the classification of spermatophytes Ginkgo Biloba is present in the class Coniferales. Ginkgo Biloba tree is also called as living fossil. dicotyledonous embryo is present.

PtO

(f.) Siphonostele → ectophloic
→ Amphiphloic

Ectophloic



Pith in centre → Xylem → Phloem
↓
Pericycle
↓
Endodermis
↓
Cortex
Cortex

Amphiphloic

Outer Outer
Cortex → Endodermis → Pericycle
(Outer)
↓
Outer Phloem
↓
inner ← inner ← Xylem
Endodermis Phloem
Pericycle
↳ innerendodermis → Pith (centre)

Paper Code

19

Amphiphoic Siphonostele

(g)

Presence of vessels is the characteristic feature of the Gnetales as vessels are not present in rest of Pteridophytes but it is present in Gnetales. Vessels are present in the Xylem. It helps in the conduction of water and to whole plant. due to the presence of vessels Gnetales are considered as precursor to the Angiosperms

Paper Code

(H.)

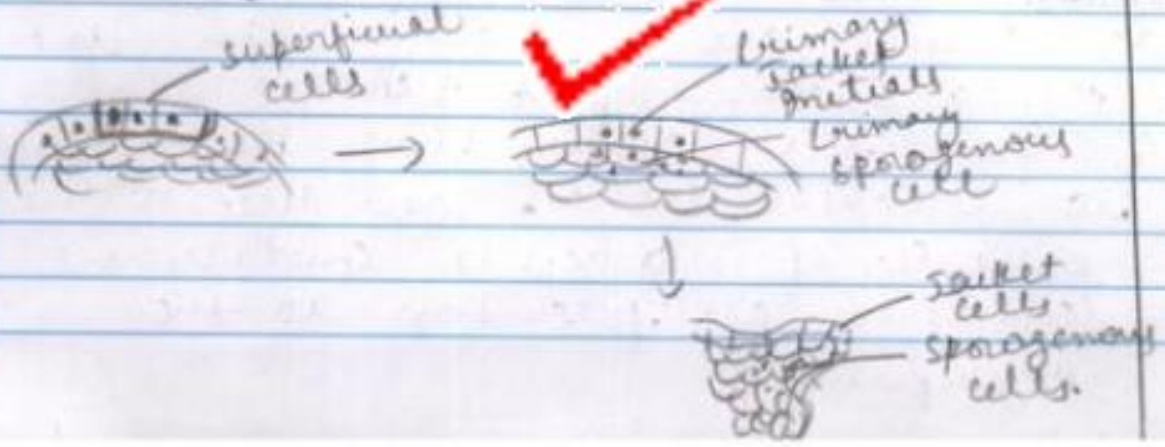
Sporangia development

- Leptosporangiate (from the ~~sep~~ single cell)
- Eusporangiate (from superficial cells) ✓

i) **Eusporangiate**

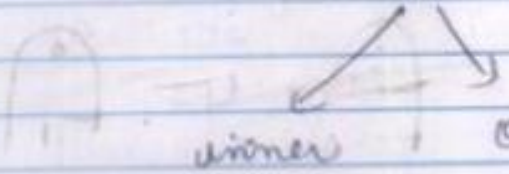
the development of sporangia is eusporangiate when it is developed from the superficial cells

- Primary sporogenous cells → sporogenous cells
- Primary Jacket cells initially (outer protective covering)



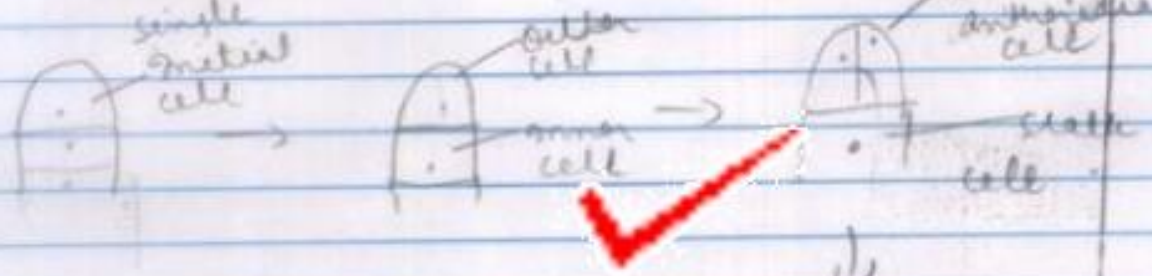
ii.) Leptosporangiate

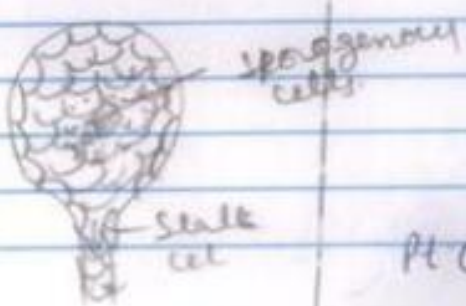
⊛ development of the sporangia from the single cell (initial) there is division



inner cell → does not divide → forms → stalk

outer cell → further divides and forms sporogenous cells and other layers primary archesporium and other layers





P.T.O

2.) Stomata are the opening which helps in the exchange of gases from outer atmosphere. Stomata are almost present in all green plants as it helps in exchange of gases from outer atmosphere. Stomata are dumpbell shaped it helps in the exchange of gases like CO_2 & O_2. They are open in day and closed in night. potassium ion regulate the opening & closing of stomata. Syndetochellic and haplochilic stomata is present their in certain gymnosperms.

Paper Code

23

X

Paper Code

24

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