2018

BOTANY

BOT 103

GYMNOSPERMS, ANGIOSPERMS ANATOMY AND ADVANCED MORPHOLOGY

Full Marks: 80

Time: 3 hours

The figures in the margin indicates full marks for the questions

1. **Answer the following MCQ:** (All questions are compulsory) (1x7=7)

i. The resin duct of a gymnospermous stem is an example of

a. Intercellular spaces b. Scizogenous cavity

c. Lysigenous cavity d. Big vacuole

ii. *In Cycas*, the pollen grains are shed at the

a. 4- celled stage b. 2-celled stage

c. 1-celled stage d. 3-celled stage

iii. Circinate venation is common to both

a. Cycads and Pinus b. Cycads and Ferns

c. Horsetails and ferns d. Cycads and horsetails.

iv. In which period and age *Ginkgo* had luxuriant and worldwide distribution

a. Recent and Cretaceous

b. Triassic and Jurassic Periods of Mesozoic

c. Permian and Paleozoic d. Devonian and Mesozoic

v. Match the following

a. The Apical Cell Theory	i. Schuepp(1917)
b. The Histogen Theory	ii. Nageli(1858)
c. The Tunica Corpus Theory	iii. Hanstein(1870)
d. Korper Kappe Theory	iv. Schmidt(1924)
A. a-ii; b-iii; c-iv; d-i	B. a-iii; b-ii; c-iv; d-i
C. a-ii; b-iii; c-i; d-iv	D. a-i; b-iii; c-iv; d-ii

vi. The most important Indian fossil of Cycad is

a. *Bowenia spectabilis*	b. *Dioon spinulosum*
c. *Williamsonia sewardiana*	d. *Lyginopteris oldhamia*

vii. The vascular cambium and cork cambium are the examples of

a. Apical meristem	b. Lateral meristem
c. Intercalary meristem	d. Elements of xylem and phloem

2. Answer the following short questions. (Any seven) (2x7=14)

a. Cork cambium forms tissues. Do you agree with this statement? Justify the statement.

b. What is sapwood and heartwood?

c. What are the different types of anomalies in angiosperms?

d. What do you mean by " sulphur shower" phenomenon?

e. What is stele? Write the different types of stele with examples 1+1=2

f. What are the floral mechanisms favoring cross pollination?

g. Write the anatomical differences between dicotyledonous and monocotyledonous stem.

h. What are medullary rays and what are their functions?

i. Mention the xerophytic characters of *Pinus* leaf.

3. Answer the following question: (Any four) (5x4=20)

a. What is fossil? Write briefly the different method of fossilization.

b. Write the morphology of the ovuliferous scale of *Pinus*

c. Write a brief account on the economic importance of Gymnosperm.

d. Write a general account of Cycadofilicales.

e. Give a basic outline of Geological time scale distinguishing the origin and declining of Gymnosperms.

4. Answer the following questions (Any three) (3x9=27)

a. Give a brief account on development of male gametophytes in Cycads.

b. Discuss briefly the different theories of apical meristem.

c. Discuss the reproductive characters of *Ginkgo*.

d. What is secondary growth? Draw and describe the anomalous secondary growth of a stem. (1+8=9)

e. "*Gnetum* shows the link between gymnosperm and angiosperm". Justify the statement

5. Answer the following question: (Any one) (1x12=12)

a. *Ginkgo* is a living fossil. Why? Describe the distinguishing features and interrelationship of Ginkgoales. 2+10=12

b. Write a brief note on patterns of nodal anatomy and anomalous secondary growth.

c. What is meristem? Write its main characters. Classify its type on the basis of their origin and function. 1+4+7=12

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