2020
BOTANY
[HONOURS]
Paper : IV

Full Marks : 75 Time : 4 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP-A
[Cell Biology and Economic Botany]
(Marks : 40)

1. Answer any **five** of the following : 2×5=10
   a) What are the basic principle behind the working of spectrophotometer?
   b) Why lysosome is called suicidal bag?
   c) What is the morphological nature of cotton fibre? Mention its uses.
   d) What is 'NOR' and what is its function? 1+1
   e) Name two essential oil yielding plant with the popular name of the oil product. $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}$
   f) What are the functions of Peroxisomes and where it is found in plants?

   g) "Pulses could be a cash crop in Purulia" — Explain why.
   h) What are the composition of Nuclear lamina?
2. Answer **two** of the following : 5×2=10
   a) Write down the functions of Endoplasmic reticulum and what are the differences between RER and SER. 5
   b) With suitable diagram, mention the checkpoint of cell cycle with cyclin and CDK's. 5
   c) Mention the processing of Juice of sugarcane to sugar crystal. 5
   d) Write a short note on eukaryotic r-RNA Processing. 5
3. Answer any **two** of the following : 10×2=20
   a) Write down with diagram the structure of nuclear pore complex. How does transport of molecule takes place through nuclear membrane and nuclear pore complex? $5+2\frac{1}{2}+2\frac{1}{2}=10$
   b) Describe the suitable climate, method of Cultivation Management, Harvesting of Mango. 2+2+4+2=10
   c) Write a brief essay on Molecular Organization of Chromatin. What do you mean by facultative heterochromatin? 8+2=10

d) Discuss the structure of plasma membrane with labelled sketch. Write a short note on 'Programmed cell death'. 5+3+2=10

GROUP-B

[Pharmacognosy and Pteridophyta]

(Marks : 35)

4. Answer any **two** questions : $2\frac{1}{2}\times 2=5$

   a) What is synangia and where it is found?

   b) Distinguish between apogamy and apospory. What are stromium and annulus? $1\frac{1}{2}+1=2\frac{1}{2}$

   c) What are ligule and glossopodium? $1\frac{1}{2}+1=2\frac{1}{2}$

   d) Differentiate between eustele and ataccostele.

5. Answer any **two** questions: $5\times 2=10$

   a) Describe the vegetative structure of Rhynia. Mention its geologic distribution. 4+1=5

   b) What are the active principles obtained from *Rawolfia serpentina*? Mention their uses. What is atropin? 2+2+1=5

   c) Mention the important xerophytic and hydrophytic adaptations found in *Equisetum*. 5

   d) Why *Lepidocarpon* is called a pseudospermatophyte? Briefly describe the structure of Strobilus of Lepidodendron. 2+3=5

6. Answer any **two** questions: $10\times 2=20$

   a) Compare the sporophytes of *Lycopodium* and *Selaginella*. Write types and distinctive features of the prothallus of *Lycopodium*. 6+4=10

   b) What is stele? Describe different types of stele found in Pteridophyte showing their evolution. 2+8=10

   c) Mention the active principle, parts used and therapeutic uses of $\left(1+\frac{1}{2}+1\right)\times 4=10$

      i) *Cinchona*

      ii) *Atropa*

      iii) *Andrographs*

      iv) *Catharanthus*

   d) Write a brief account of the anatomical structure of *Psilotum* Stem. Compare the development of male gametophytes of *Selaginella* and *Marsilea*. 4+6=10

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Paper : V

Full Marks : 50 Time : 2 Hours

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Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** questions : 2×5=10

   a) Distinguish between autecology and synecology.

   b) What is mutualism? Cite an example.

   c) What is meant by carrying capacity?

   d) What is meant by endemic species? Name one such species from India.

   e) Distinguish between manoxylic and pycnoxylic woods.

   f) Mention two angiospermic features of *Gnetum*.

   g) What is the full form of PAN? What is its effect on environment?

   h) What is crassulae?

2. Answer any **four** questions : 5×4=20

   a) What is ecological niche? Explain with examples the different types of niches. 2+3=5

   b) What are the aims of plant geographical studies? Name any six phytogeographical regions of India. 2+3=5

   c) Give an outline classification of gymnosperm as given by Stewart and Rothwell (1993). 5

   d) Name a climbing species of Gnetum. Describe the ovulate organ of the genus. 1+4=5

   e) What is meant by eutrophication? Lotic ecosystem how differ from lentic ecosystem? 2+3=5

   f) What is edge effect? Briefly describe the inverted ecological pyramid. 2+3=5

   g) Discuss the ecological effects of wind and precipitation on vegetation. $2\frac{1}{2}+2\frac{1}{2}=5$

3. Answer any **two** questions from the following : 10×2=20

a) Write an essay on the Vegetation of Eastern Himalaya with reference to different atudinal zones. Define ecotone. 8+2=10

b) What is meant by 'Biogeochemical Cycle'? With the help of a flow chart explain nitrogen cycle. Define 'standing crop'. 2+8=10

c) Define secondary succession. Briefly describe the different steps of succession. 2+8=10

d) Mention the geological and geographic distribution of the *Glossopteris* plant. Draw and describe the morphological features of its different organ genera. 2+8=10

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