

171045

COMBINED COMPETITIVE EXAMINATION (MAIN)

BOTANY

Paper-I

Time : 3 Hours

Full Marks : 200

Note : (1) The figures in the right-hand margin indicate full marks for the questions.

(2) Attempt five questions in all

(3) Question No. 1 is compulsory.

1. (a) Distinguish between the following : 2×10=20
- (i) Basidiocarp and Ascocarp
 - (ii) Virus and Viroid
 - (iii) Symbiotic and Non-symbiotic bacteria
 - (iv) Eusporangiate and Leptosporangiate types of Sporangia
 - (v) Perisperm and Endosperms
 - (vi) Ring porous and Diffuse porous woods
 - (vii) Facultative parasite and Obligate parasite
 - (viii) Homology and Analogy
 - (ix) B-cell and T-cell
 - (x) Epigynous and Perigynous flowers
- (b) Choose the correct answer : 2×5=10
- (i) Algae present in the thallus of *Anthoceros* is
 - 1. *Anabaena*
 - 2. *Nostoc*
 - 3. *Oscillatoria*
 - 4. *Cylindrospermum*

(ii) Which of the following is known as living fossil?

1. *Gnetum*
2. *Cycas*
3. *Ginkgo*
4. *Zamia*

(iii) Presence of intra- or interpetiolar stipule is a characteristic feature of the family

1. Amaranthaceae
2. Malvaceae
3. Acanthaceae
4. Rubiaceae

(iv) Aflatoxin is produced by the mold

1. *Aspergillus fumigatus*
2. *Aspergillus terreus*
3. *Aspergillus flavus*
4. *Aspergillus niger*

(v) Fern gametophyte is

1. homothallic
2. heterothallic
3. heteroecious
4. autoecious

(c) Explain any **five** of the following :

2×5=10

- (i) Totipotency
- (ii) Hesperidium
- (iii) Disease triangle
- (iv) Anatomy of maize seed
- (v) Functions of elaters
- (vi) Microbes in antibiotic production

2. Write on any **eight** of the following :

5×8=40

- (a) Rhizophore of *Selaginella*

- (b) Tobacco mosaic virus
(c) Agricultural application of algae
(d) Advanced characters of Orchidaceae
(e) Koch's postulate
(f) Microsporogenesis
(g) Secondary phloem
(h) Biological control of plant disease
(i) Edible fungi
(j) Water conduction of *Polytrichum*
3. Write on any *five* of the following : 8×5=40
- (a) Special types of inflorescence
(b) Effects of mycotoxins in human health
(c) Morphology of corm of *Isoetes*
(d) Role of microbes in bioremediation
(e) Exponential growth phase of bacteria
(f) Disease caused by nematodes
4. Answer any *four* questions of the following: 10×4=40
- (a) Write about industrial utilization of yeast.
(b) Give an outline of Bentham and Hooker system of classification. What are the merits and demerits of this system?
(c) Write the structure of bacteriophage.
(d) What is meant by embryo culture? Write the application in respect to experimental embryology.
(e) Give the classification of algae based on their pigments.
5. Answer any *two* of the following : 20×2=40
- (a) Mention the salient features of any *four* of the following and their economic importance:
- (i) Taxaceae
(ii) Cucurbitaceae
(iii) Umbelliferae

- (iv) Liliaceae
- (v) Poaceae
- (b) With neat diagram, describe the evolution of sporophytes among bryophytes.
- (c) Write about the origin and evolution of cork cambium. What are the functions of cork cambium?
6. Explain any *two* of the following : 20×2=40
- (a) An important disease of sugar yielding plant of India and its management
- (b) Mode of parasitism of soil-borne disease on economically important plants
- (c) Role of serology in taxonomic study
7. Write on the following : 20+10+10=40
- (a) Origin of pteridophytes
- (b) Comparison of the ovule bearing organs of *Cycas* and *Pinus*
- (c) Commercial production of citric acids
8. Give a detailed account on embryo sac development in angiosperms. 40
9. Define sexual incompatibility of flowering plants. Discuss that barriers to fertilization is an important isolation mechanism exists in angiosperms. 40
10. Point out the differences between fern and fern allies. Write about soral evolution in ferns. 40