2021

BOTANY — HONOURS

Paper : CC-8

(Plant Geography, Ecology and Evolution)

Full Marks : 50

The figures in the margin indicate full marks.

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

1. Answer ***any five*** questions:

(a) Name one endemic plant each from Western Ghat and Eastern Himalaya regions of India. 1+1

(b) Distinguish between habitat and ecological niche. 2

(c) What is edge effect? 2

(d) What are metallophytes? Cite one example. 1+1

(e) What is cryopreservation? 2

(f) Define punctuated equilibrium. 2

(g) Define coevolution. 2

(h) What is adaptive radiation? Give an example. 1+1

2. Answer ***any two*** of the following in brief: 5×2

(a) Discuss endemism in Indian flora.

(b) Explain phytoremediation types with examples.

(c) Comment on the neutral theory of molecular evolution.

3. Answer ***any three*** of the following:

(a) Describe the Phytogeographical regions of India according to D. Chatterjee (1960). Write brief notes on mangrove vegetation of Sunderban, India. 6+4

(b) What is the difference between autogenic and allogenic successions? Describe the various seral stages of hydrosere with suitable illustration. 3+7

(c) Discuss different levels of biodiversity. Comment on the *in situ* conservation of biodiversity in India. 4+6

(d) What is speciation? Give a comparative account of sympatric and allopatric speciation. Comment on the methods of reproductive isolation. 2+5+3

(e) Distinguish between directional and disruptive selection. Comment on the methods of sexual selection. 6+4

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BOTANY — HONOURS

Paper : CC-9

Full Marks : 50

The figures in the margin indicate full marks.

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

1. Answer ***any five*** questions from the following: 2×5

(a) What is essential oil? Why it is called ethereal oil?

(b) What is 'Dammar gum'? Mention its uses.

(c) What do you mean by the term 'beverages'? Give an example.

(d) Name the alkaloids found in *Cinchona* species. From which plant parts do we obtain these alkaloids?

(e) Distinguish between New World cotton and Old World cotton.

(f) What is 'Triticale'?

(g) Write the scientific names of two indigenous timber yielding plants.

(h) Define the term acclimatization.

2. Answer ***any two*** questions from the following:

(a) Write notes on primary and secondary introduction of crops. 2½+2½

(b) Comment on the origin of rice plants. 5

(c) Discuss in brief the products and by-products of sugarcane. 5

(d) Give a brief account on the retting and extraction of jute. Name two species of cotton cultivated in India. 3+2

3. Answer ***any three*** questions from the following:

(a) Describe the steps involved in the processing of tea. Mention the names of different tea-types based on processing methods. Write the scientific name of tea plant. 6+3+1

(b) Distinguish between essential oil and fatty oil. Write the process of steam distillation for the extraction of essential oil. Why soyabean oil is considered as a healthy oil? Write the scientific names of coconut and mustard plants. 2+4+2+2

(c) Mention the parts used and uses of the following spice plants: 2½×4

(i) Cumin

(ii) Bay Leaves

(iii) Saffron

(iv) Jayitri.

(d) Give the botanical name, family and a brief account of method for propagation of potato. 2+1+7

(e) Discuss in brief the Vavilovian Centre of origin of cultivated crops with examples of specific crops of each region. Comment on the different reasons for the loss of genetic diversity. 7+3

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2021

BOTANY — HONOURS

Paper : CC-10

(Genetics)

Full Marks : 50

The figures in the margin indicate full marks.

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

1. Answer ***any five*** questions from the following: 2×5

(a) What is Robertsonian Translocation?

(b) What happens when an autopolyploid is crossed with its parent?

(c) What is the function of RuvAB proteins?

(d) What is spliceosome?

(e) What are the characteristics of Polygenic Inheritance?

(f) What are the full forms of GISH and FISH?

(g) What is overlapping gene? Give an example.

(h) Mention the dihybrid ratio of Dominant and Recessive epistasis.

2. Answer ***any two*** questions from the following:

(a) Explain the ABCE quartet model of flower development. 5

(b) What is transposon? Explain the Ac-Ds system in maize. 1+4

(c) Briefly describe the detection of crossing over with the help of McClintock's experiment. 5

(d) What are palindromes? Briefly discuss the different types of Tandem Repeats. 1+4

3. Answer ***any three*** questions from the following:

(a) What is tautomerism? How tautomeric shifting cause point mutation? 2+8

(b) (i) A plant heterozygous for three gene pairs CshWx/cShwx was crossed to cshwx/cshwx and the progenies obtained were classified as follows:

CshWx-2777
cShwx-2708
CShwx-116
cshWx-123
Cshwx-643
cShWx-626
CShWx-4
cshwx-3

Draw a linkage map showing the gene order and the distances between the three loci.

(ii) Differentiate between Co-efficient of interference with co-efficient of coincidence. 8+2

(c) Describe in brief the mechanism of nucleotide excision repair and mismatch repair. 5+5

(d) (i) Enumerate the origin of amphidiploids. State its importance.

(ii) Describe how base analogue incorporation and deamination cause mutation. (3+2)+(2½+2½)

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2021

BOTANY — HONOURS

Paper : SEC-B-4

(Mushroom Culture Technology)

Full Marks : 80

The figures in the margin indicate full marks.

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

1. Answer ***any ten*** questions from the following: 2×10

(a) Give an example of edible mushroom from ascomycetes.

(b) What is spawn?

(c) What is compost?

(d) Name two artificial culture media for mushroom cultivation.

(e) Name any two mushroom research centres of India.

(f) Name two surface sterilizing agents.

(g) Write the identifying characters of poisonous mushrooms.

(h) What do you mean by food values of mushroom?

(i) Why calcium hydroxide is used in paddy straw mushroom cultivation process?

(j) What is the ideal pH of mushroom substratum?

(k) What is Golden Oyster mushroom?

(l) What are amatoxins? State its source.

(m) State the role of brine in mushroom storage.

(n) Name two food items prepared from mushrooms.

(o) What do you mean by browning of *Agaricus* fruit body?

2. Write short notes on the following (***any four***): 5×4

(a) Types of sterilization methods used in mushroom cultivation.

(b) Mushroom canning technique.

(c) Low cost technology for mushroom cultivation.

(d) Cage method of Paddy Straw mushroom cultivation.

(e) Health benefits of mushrooms.

(f) Types of mushroom bed preparation.

3. Answer ***any four*** questions from the following:

(a) What is mother culture? Describe the process of composting in mushroom cultivation. 2+8

(b) (i) What are the advantages of cultivation of paddy straw mushroom?

(ii) Explain in brief the process of substrate preparation for cultivation of Oyster mushroom. 5+5

(c) Describe the prospects of marketing of mushrooms. Write in brief the use of polythene bags and vessels for mushroom cultivation. 4+3+3

(d) What are the steps for mushroom cultivation? State the importance of mushroom storage. Mention the different methods of short term storage of mushrooms. 3+2+5

(e) What do you mean by toxic mushroom? With suitable illustrations discuss the effect of toxins present in common poisonous mushroom strains. 2+8

(f) Write about the types of nutrients present in edible mushroom. Briefly state the benefits of mushroom in daily diet. 6+4
