(T(3rd Sm.)-Botany-H/CC-5/CBCS)

# 2020

# **BOTANY** — **HONOURS**

### Paper : CC-5

#### 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.	Ans	nswer any five of the following:		
	(a)	Which rock type is most suitable for preservation of fossils? Why?	1+1	
	(b)	What are chemical fossils? Give an example.	1+1	
	(c)	Which geological period is called the 'Age of Ferns'? Why?	1+1	
	(d)	State the chemical nature of sporopollenin.	2	
	(e)	Mention the reasons behind Edward's renaming of Rhynia major.	2	
	(f)	What is hydrasperman reproduction?	2	
	(g)	Distinguish between spores and pollen grains.	2	
	(h)	Name the form genera of the root and leaf of Lepidodendron.	2	
2.	Ans	Answer any two of the following:		
	(a)	Write a short note on the principle of radiometric dating of rocks / fossils.	5	
	(b)	Comment on the gametophyte of Rhynia.	5	
	(c)	What is Aeropalynology? Write a brief note on the role of Aeropalynology on human health.	1+4	
3.	Ans	answer any three of the following:		
	(a)	(a) Give an outline of the three-fold subdivisions of Indian Gondwana. Mention at least five characteristic megafossil genera from the respective subdivisions. $2\frac{1}{2}+7\frac{1}{2}$		
	(b) Describe the modes of cellular permineralisation and authigenic preservation of fossils mentioning one example from each type.			
	(c)	Characterise the stem anatomy and fructifications of the reconstructed plant <i>Calamites</i> with suita illustrations.	ıble 4+6	
	(d)	State the geological age of the reconstructed plant <i>Cordaites</i> . Describe its leaf anatomy and fem fructifications with labelled sketches. 1+4	nale 4+5	
	(e)	Give an account of sporoderm stratification as proposed by Erdtman and Faegri with label sketches. Draw the different exine ornamentation patterns found in spores and pollen grains.	lled	

5+5

T(3rd Sm.)-Botany-H/CC-6/CBCS

# 2020

# **BOTANY** — **HONOURS**

### Paper : CC-6

### 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.	An	swer the following questions :		
	(a)	What is perisperm? Give an example.		1+1
	(b)	What is a compound spadix inflorescence?		1
	(c)	Define schizocarpic fruit. Give an example.		1+1
	(d)	Define aggregate fruit.		1
	(e)	What is hypocrateriform corolla? Give an example.		1+1
	(f)	What is apogamy?		1
	(g)	How a spike differs from a raceme inflorescence?		1
2.	An	swer any two from the following :		
	(a)	Write a short note on apomixis in angiosperms.		5
	(b)	Distinguish between cyathium and hypanthodium inflorescences with one example	each. 2	1/2+21/2
	(c)	With suitable examples describe different fleshy indehiscent fruits.		5
	(d)	Describe different types of pollen tube entry into ovule with examples.		5
3.	An	swer any three from the following :		
	(a)	What is cymose inflorescence? Describe different types of cymose inflorescences	5.	2+8
	(b)	Define double fertilization. Describe double fertilization with suitable diagrams.		3+7
	(c)	What is megasporogenesis? Describe monosporic and bisporic types of megagame	etogenesis	<b>.</b>
				2+4+4
	(d)	Describe the genetic and molecular aspects of flower development.		10
	(e)	With labelled diagrams describe four different types of ovule.	21/2+21/2+2	1/2+21/2

[T(3rd Sm.)-Botany-H/CC-7/CBCS]

# 2020

### **BOTANY** — **HONOURS**

#### Paper : CC-7

#### 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	of the	following:	
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	(a) Define Holotype.	2
	(b) Define taxon and nothotaxon.	1+1
	(c) Name the largest herbarium in the World. Mention its acronym.	1+1
	(d) Distinguish between phenetics and cladistics.	2
	(e) What do you mean by OTU? Give one example.	11/2+1/2
	(f) What is virtual herbarium?	2
	(g) What is basionym? Cite one example.	1+1
•	Write notes on any two of the following :	5×2
	(a) Rules of Priority.	

- (b) Palynology in relation to taxonomy.
- (c) Conditions of valid publications.

2

- (d) Role of herbaria in teaching and research.
- 3. Answer any three of the following :
  - (a) What do you mean by natural system of classification? Give an outline of Bentham and Hooker's System of Classification (1862-1883) up to Series. Mention two merits and two demerits of this system. 1+5+(2+2)
  - (b) Briefly describe the floral morphology of Apiaceae (Umbelliferae) with floral diagram. State the primitive features of the family Magnoliaceae. Give one example of each of these two families.

4+4+1+1

- (c) Distinguish between Musaceae, Cannaceae and Zingiberaceae based on floral characters. Name any one economically important plant each from Musaceae and Zingiberaceae. 8+(1+1)
- (d) Compare the androecium characters of Asteraceae, Euphorbiaceae and Cucurbitaceae. Name one economically important plant of each family.
  7+3

#### **Please Turn Over**

(c) rubber uny two of the following:
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(i) Comment on the Biosystematics and the Encyclopedic phase of taxonomy.	21/2+21/2
(ii) What is neotype? Distinguish it from isotype.	21/2+21/2
(iii) Role of secondary metabolites in angiosperm taxonomy citing two examples.	21/2+21/2
(iv) State the Principles of ICN.	5

T(3rd Sm.)-Botany-H/SEC-A-2/CBCS

# 2020

### **BOTANY** — **HONOURS**

#### Paper : SEC-A-2

#### (Biofertilizers)

#### 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 in brief :

- (a) Name one symbiotic and one non-symbiotic  $N_2$  fixer.
- (b) What is Ericoid Mycorrhiza?
- (c) What is YEM?
- (d) Name two bacteria in sewage that reduces the BOD.
- (e) What is bacterization?
- (f) Write two advantages of biofertilizer.
- (g) What is vermicompost?
- (h) Why is cyanobacteria considered as biofertilizer?
- (i) What is Hartig Net?
- (j) Why the Azolla-Anabaena azollae association is more suitable for rice cultivation?
- (k) Mention the two species of Rhizobium with their associated legume plants.
- (l) Mention the scientific name of one actinorhizal angiospermic genus along with its symbiont.
- (m) Who has coined the term 'organic farming'? Who was known as 'father of organic farming'?
- (n) Name two important properties of an ideal carrier material of Rhizobium.
- (o) What is algalization?

#### 2. Write short notes on (any four) :

- (a) Types of organic fertilizers.
- (b) Major advantages and limitations of biofertilizer.
- (c) Methods of vermicomposting.
- (d) Isolation and inoculum production of VA mycorrhiza.
- (e) Associative symbionts and soil fertility.
- (f) Mass multiplication of Azotobacter.

**Please Turn Over** 

2×10

5×4

- 3. Answer any four questions :
  - (a) How are N-biofertilizers added to the field? What is seed pelleting? 6+4
  - (b) Write a note on mass production of cyanobacterial biofertilizer. How can cyanobacteria increase soil fertility? 7+3
  - (c) Why is Azospirillum also known as N-fixing spirillum? Briefly describe the mass multiplication procedure of Azospirillum. Write a short note on the different types of media used for mass production of Azospirillum. 2+4+4
  - (d) Write a short note on recycling of biodegradable agricultural and industrial wastes. 5+5
  - (e) What do you mean by actinorhizal symbiosis? Briefly describe the infection process and nodule formation in an actinorhizal species studied. 2+8
  - (f) Discuss the following :
    - (i) Differences between ectomycorrhiza and endomycorrhiza.
    - (ii) Advantages and disadvantages of green manuring. 5+5