Indian Forest Service
(Main) Exam, 2020

JKLO-U-BTN

BOTANY

Paper – I

*Time Allowed : **Three** Hours*

*Maximum Marks : **200***

Question Paper Specific Instructions

Please read each of the following instructions carefully before attempting questions :

*There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.*

*Questions no. **1** and **5** are compulsory. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.*

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

Neat sketches may be drawn, wherever required.

*Answers must be written in **ENGLISH** only.*

SECTION A

Q1. Answer the following questions keeping your answers brief and to the point.

(a) How can algae be used in sewage treatment ? *8*

(b) With a labelled sketch describe the ultrastructure of bacterial flagella. Describe its mechanism of movement. *5+3=8*

(c) Explain in detail the process of fertilization in Angiosperms. *8*

(d) Describe and differentiate heterocyst cell from blue-green algal cell. *8*

(e) Deuteromycotina has been called "Waste Basket Assemblage." — Substantiate. *8*

Q2. (a) Describe the stelar organization and evolution in Pteridophytes. *15*

(b) Describe the life cycle of the pathogen causing damping-off of seedlings of tobacco and tomato. *15*

(c) Describe the mechanism and benefits of parasexuality. *6+4=10*

Q3. (a) Discuss the three kinds of mycelia encountered in Basidiomycetes. With suitable diagrams bring out the significance of clamp connection. *10+5=15*

(b) Trace the evolution of sporophytes in Bryophytes with neat labelled sketches only. *15*

(c) What are Antibiotics ? Describe the mode of action of aminoglycosides. *5+5=10*

Q4. (a) Name the organisms causing black, yellow and brown rust of wheat. Describe the symptoms of black rust of wheat and the life cycle of the pathogen causing it. *6+9=15*

(b) What do you mean by genetic recombination ? Describe different methods of bacterial recombination. *5+10=15*

(c) What is dissemination of disease ? Describe methods of plant virus dissemination in brief. *2+8=10*

SECTION B

Q5. Answer the following questions keeping your answers brief and to the point.

(a) Comment on (i) Totipotency, (ii) Somatic hybrids vs. Cybrids. *4+4=8*

(b) What are Petrocrops ? Name 4 (four) promising petrocrop species with family. *4+4=8*

(c) Enumerate the applications of palynology. *8*

(d) What is plant defence ? Explain different mechanisms of plant defence. *3+5=8*

(e) "Petrified fossils are the marvels of paleobotanical studies." — Substantiate. *8*

Q6. (a) Define Fumitories and Masticatories. Describe in detail the origin, botanical characteristics and cultivation of one representative each of the above categories. *5+10=15*

(b) Illustrate the floral characters of the family Arecaceae with floral formula and floral diagram. Why is this family economically important ? *10+5=15*

(c) What is tissue culture ? How can this technique help in reviving the endangered plant species ? *4+6=10*

Q7. (a) Differentiate Heterospory from Homospory. How does heterospory lead to seed habit ? Discuss the biological significance of heterospory with reference to *Selaginella*. *3+6+6=15*

(b) Enlist the botanical names of five plants yielding drugs and mention the plant parts from where the drugs are obtained. *7+8=15*

(c) Describe successive stages of development of cellular endosperm. *10*

Q8. (a) Describe the methods of cultivation of rubber plants. Describe how the latex is processed to get rubber. What precautions are taken while tapping rubber ? *6+6+3=15*

(b) What are the differences between Dicot and Monocot roots ? With suitable diagrams explain secondary growth in dicot roots. *6+9=15*

(c) Mention the botanical name with family of plants yielding the following, with the morphology of the part used : *5×2=10*

(i) Spices

(ii) Perfumery

(iii) Gums

(iv) Sugar

(v) Beverages