

**I.F.S. EXAM-(M) 2018**

**BOTANY**

**PAPER-II**

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.

Question Nos. **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**

1. Write a short note on each of the following :  $8 \times 5 = 40$
- (a) Packaging of DNA in chromatin
  - (b) Chloroplast dimorphism
  - (c) Post-transcriptional modifications of mRNA
  - (d) Role of endoplasmic reticulum in protein sorting and targeting
  - (e) Objectives and properties of probability
2. (a) Describe the molecular basis of cell cycle transitions with suitable illustrations. Explain the role of CDKs in controlling transitions between cell cycle stages.  $10 + 10 = 20$
- (b) Discuss the mechanism of transport of molecules across the cell membrane by uniport, symport and antiport. Add a note on co-transport by symporter and uniporter.  $15 + 5 = 20$
3. (a) Describe the molecular mechanism of gene linkage and crossing-over. Explain how gene mapping is constructed using gene linkage with suitable diagrams.  $10 + 10 = 20$
- (b) Describe different methods of selection and hybridization in plant breeding. Give a note on heterosis breeding.  $15 + 5 = 20$
4. (a) Describe different stages of micropropagation in detail, mentioning the significances of each stage. Give a brief account on commercial micropropagation.  $15 + 5 = 20$
- (b) Describe the initiation of translation process in prokaryotes with suitable illustrations. How does it differ from eukaryotes?  $15 + 5 = 20$

## **SECTION—B**

5. Write a brief note on each of the following :  $8 \times 5 = 40$
- (a) Role of Rubisco in carbon metabolism
  - (b) Importance of different types of secondary metabolites in plant defense and as pharmaceuticals

- (c) Endemism and endangered plant species
  - (d) Hot spots in India : Characteristics and conservations
  - (e) Allosteric enzymes and metabolic control
- 6.** (a) Illustrate the structure of ATP synthase and discuss the mechanism of ATP synthesis in higher plants.  $5+15=20$
- (b) Explain elaborately the molecular basis of fruit ripening. How can this process be manipulated?  $15+5=20$
- 7.** (a) Discuss the mechanism of nitrogen fixation associated with legumes and elaborate the factors controlling the process.  $10+10=20$
- (b) Describe the adaptive responses at the morphological and physiological levels in higher plants to water deficit stress conditions.  $10+10=20$
- 8.** (a) Explain the ecological characteristics of different types of forests found in India. Describe briefly about the dominance of vegetation types of tropical and alpine forests.  $10+10=20$
- (b) Discuss the concept of climax community. Write a note on succession of estuarine ecosystem.  $10+10=20$

★ ★ \*

