Indian Forest Service
(Main) Exam, 2020

JKLO-B-AGRC

AGRICULTURE

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.*

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.

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

SECTION A

Q1. Answer the following :

(a) What is cell ? Enlist different organelles of plant cell with a brief description of mitochondria. *8*

(b) What do you mean by heterosis ? Describe the genetic basis of heterosis. *8*

(c) Describe the agronomic and genetic principles of quality seed production. *8*

(d) Explain in detail the Krebs cycle. *8*

(e) Explain the molecular marker approach in crop improvement. *8*

Q2. Answer the following :

(a) Describe the role of Cytoplasmic Genetic Male Sterility (CGMS) and Self-incompatibility (SI) systems in hybrid seed production. *15*

(b) What do you mean by vertical and horizontal resistance ? Give an account of basic principles behind these resistances. *15*

(c) What do you mean by conservation of plant genetic resources ? Explain their contribution in crop improvement in India. *10*

Q3. Answer the following :

(a) Distinguish between the following, giving suitable examples : *5×3=15*

- (i) Breeder seed and Certified seed *5*
- (ii) Natural selection and Artificial selection *5*
- (iii) Cytoplasmic and Cytoplasmic-genetic male sterility *5*

(b) Write the various methods of plant breeding. Describe backcross method with its importance in development of crop varieties. *15*

(c) Describe the role of mutation in development of disease resistant varieties of crops. *10*

Q4. Answer the following :

(a) Describe the various chromosome structural aberrations with the help of suitable diagrams and discuss their effects on organisms. *15*

(b) Describe various steps involved in seed certification. Give an account of institutions associated with the production of certified seeds in India. *15*

(c) Explain various mechanisms for water transport in plants. *10*

SECTION B

Q5. Answer the following :

(a) Write down the physiological effects of auxin in plants. *8*

(b) Describe plug-tray technology for seedling production in vegetables. *8*

(c) Describe the principles of fruits and vegetables preservation. *8*

(d) Describe the major storage pests of pulses and their control measures. *8*

(e) Discuss the strengths and weaknesses of public food-grain distribution system in India. *8*

Q6. Answer the following :

(a) Describe the package of practices for 'papaya' cultivation in northern India. *15*

(b) Describe the incidence and management of 'leaf curl' and 'mosaic' virus diseases in 'Chilli' and 'Okra' crops. *15*

(c) Give a detailed account of constraints in sustaining the food-grain production in India. *10*

Q7. Answer the following :

(a) Differentiate between the following : *5×3=15*

- (i) Formal and Informal styles of gardens *5*
- (ii) Pollinator and Pollinizer *5*
- (iii) Insect vectors and Predators *5*

(b) Write a detailed note on incidence and management of fruit fly in 'cucurbits' and 'guava'. *15*

(c) Describe various factors for seed dormancy and methods for breaking the dormancy. *10*

Q8. Answer the following :

(a) Describe the year-round production technology of 'Chrysanthemum'. *15*

(b) Describe the production technology for off-season vegetables in India. *15*

(c) Discuss the integrated management practices for insect-pests and diseases in crops. *10*