What research have you done

Scope of mechanisation

Soil Conservation

What is Agronomy

Characteristics of new varieties Wheat

Mixed farming & mixed cropping.

Why do we apply statistics to agriculture.

What does standard error denote, in simple language.

Why have not "improved" ploughs been able to replace the country plough.

What journals do you read.

Name 3 leading Agronomists abroad.

Teaching experience

What is the difference between trace & trace elements.

What is meant by dand transplanting

What is the N % of FYM

How many cattle have we? (174 million)

Is potash useful in India — where & for which crops.

What is the area under rice — what is meant by indica & japonica varieties of rice.

Is green manuring advisable under non-irrigated conditions

What are the most significant changes in agriculture & agricultural research in recent years:

What farm have you managed.

Plant Breeding

1. What are centres of origin of crop plants ?
   Is it always necessary that the centre of maximum genetic diversity must be the centre of origin for a crop plant ?
   What is the centre of origin for — wheat, rice, potato, banana, sunflower ?

2. What is convergent improvement ? How would you apply it to, say, maize breeding ?

3. What do you know about the "mass pedigree selection" method used by Harland in cotton improvement.

4. What role can related species and genera of crop plants play in plant breeding ?
   How have the north Indian sugarcanes evolved ?

5. What is the genomal approach to radical wheat breeding as proposed by McFadden and Sears.
   Which species of Triticum have been or can be used in wheat breeding ?
   What species of grasses have gone into the making of today's bread wheats ?

Genetics

6. What is heterosis and how is it genetically explained ? What is the latest biochemical theory about it ?

7. What is gene mutation ? Are artificially-induced mutations of any importance in crop improvement ? What does Gustaffson's work on barley on these lines indicate ?

8. What is "tetrad analysis" ? Can you attempt it in higher plants ? Which organisms are more suitable for tetrad analysis ?

9. What contribution has work on biochemical genetics made to an understanding of gene action ?
   What are biochemical mutants ?

10. How many kinds of blood groups are there in man ? What is their genetical basis ?

11. What are Dauermodifications ? What are graft hybrids ?

12. What is the philosophical basis of Soviet Genetics ? What are its principal tenets ?

Cytology and Cytogenetics

13. What is polyploidy ? Has it played a progressive role in plant evolution ?
Mention instances in which induced autopolyploidy has helped in crop improvement.

14. What is Triticale ? Which is the best way of obtaining superior Triticale types ? Has Triticale any economically-valuable properties ?

15. Name an instance in which, in recent history, a new species got synthesised in nature and it successfully competed against its progenitor species ?
What is the economic significance of Spartina townsendii

16. What is heterochromatin ? What is its relation to polygenes ?

17. What are nucleic acids ? What are they chemically ? What is the significance of their presence in the cell ?

18. What are B-chromosomes ? What is their genetical role ?

19. How does the electron microscope work ? Is it superior to the optical microscope ? If so, why ?
What do you mean by the resolving power of the microscope ? What does it depend on ?

20. What is the genetic and cytological significance of chiasmata ?
Who, after Janssens, conclusively proved the relationship between chiasmata and genetic crossing-over ? (McClintock ; and Stern)
In which organisms does crossing-over not take place ? (Male Drosophila, Female silk worm)

Miscellaneous

21. What ~~is an~~ are "inclusive herbaria"? How do they help in understanding the origin of crop plants?

22. How do embryological studies help in plant breeding?

Name an instance in which embryo-culture has been done with a view to crop improvement. (in tomato - L. esculentum × L. peruvianum by P.G. Smith)

23. What points would you consider in breeding for yield?

24. What is lodging in cereals due to? How would you proceed to breed wheats against lodging and drought?

25. What role can plant physiological work play in plant breeding?